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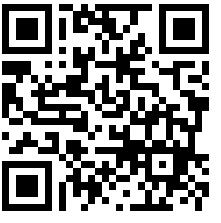
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"CHILD, CHILD," MEN SAY AND POETS SING,
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LIES IN THIS SINGLE THING."

BY PEARL GRACE LOEHR

NEW YORK

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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII JANUARY, 1916 NUMBER 1

PHOTOGRAPHING CHILDREN

By E. B. CORE

THE principal factors which enter into the composition of the successful photographer of children are good nature and patience. The former can be cultivated by sound philosophy; the latter I learned very early in life, waiting for the second table when we had company at our house.

There are few vocations in which a man's own personality plays so important a part as this of ours, where expression has so much to do with the amount of money in the cash drawer. We have all met the man who made us forget our cares; whose strong, magnetic nature seemed to thrill us through and through; who seemed to bring sunshine into the room as he entered and left it aglow on his departure, making us feel like again taking up the burden of life, which was less a burden by half. Such a one is the successful photographic operator. The subject on entering his presence forgets he has come to perform some irksome duty, is at once put at his ease, his face lights up with the general good-fellowship, and the results are likely to be a success. . . . I feel there is, perhaps, no business subject to so many petty annoyances, so many little disappointments. But because Mrs. Jones don't like her position, or Mrs. Brown isn't suited with her expression, and Mrs. Smith thinks little Johnnie's mouth too large entirely, is the case made more agreeable, and, as a fact, is it not made more disagreeable by your getting out of patience and having it out with Mrs. Jones, Mrs. Brown, and Mrs. Smith, getting yourself all worked up and thereby spoiling expressions for the whole day?

We sometimes meet a sort of a negative subject, who, though he has come to you to be made a negative, is already a very positive negative; one whom it is impossible, as Julius Strauss would

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put it, to limber up—and, by the way, I don't want to meet him if Julius Strauss couldn't limber him—one with whom one can't get in touch, can't complete the circuit in that mental telegraphy, whose answer to your every question is a monosyllable; too engrossed in his own importance to understand how really like a country judge at a country fair he looks. Such a one is hopeless. And can we only expect the proofs to convince him?

I have treated this subject in the light of adult sitters, as it applies as well to them as to children; for while an abundance of good nature and patience are desirable qualities in the handling of adults, they are absolutely indispensable to the handling of children.

While a certain amount of firmness, as well as love, rules the home-life of these little ones, in the studio all must be love and patience. Don't expect to make pleasing pictures of them if you are bored by their childish prattle. The hoary head of the octogenarian inspires us with admiration, but the innocent, unconscious beauty of childhood inspires us with love. Nothing on earth is sweeter than their bright, happy faces. Nothing more interesting than their description of the newest doll, or the big brown dog at home. I love to hear them talk, and always seek to draw them out. I try to have them feel that they are doing just what they want to do themselves: always lead and never drive them. I am often hampered by a mother who has a very obedient child and whose constant admonition is, "Now keep right still and do just what the man says." He will stand still, but not as gracefully as one of those painted wooden figures, ready at a moment's notice to perform his part in the, to him, mysterious, useless, and maybe dangerous operation. He is your positive negative in childhood, but you can limber him with a game of ball. They frequently say, "Ain't I doin' to have my pictur' taken?" after I am all through, thinking they had only been having a romp with me.

Don't shove them out the moment the sitting is completed, for there are none so quick to detect insincerity, though none so quick to repay your love. Any interest taken in them finds a ready response in the mother's heart and a generous response in her pocket-book.

POINTS CONCERNING SEPIA TONING[1]

By R. GLODE GUYER

IF you take up any printed instruction on this process and read it through, you will think it one of the most delightfully simple, plain-sailing processes it is imaginable to use, but when you put print into practice you soon discover that you are surrounded by battalions of troubles of various descriptions, and it is to a few of these I would draw your attention.

There are, substantially speaking, two different classes of processes for the production of sepia tones, and these two classes are termed the direct and indirect.

Each of these classes is subjected to a whole host of variations and modifications, called different processes, which is, however, a misnomer, because if these so-called processes are carefully studied they at once resolve themselves into mere modification of the most petty, paltry kind to which the modificator appends his name, trusting thereby to be immortalized in the list of photographic celebrities.

The direct process is one in which only one solution (or shall I call it bath)

[1] An address before the Edinburgh Photographic Society.

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"SUPPER TIME"
BY PEARL GRACE LOEHR
NEW YORK

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has been used, and for a classical example we must take our old friend hypo-alum, for it was the forerunner of all the present-day processes; and chemically considered it has the same principle involved as the rest of the direct processes, such as the colloid sulphur, polysulphides of calcium, polyhydrosulphides of sodium, and all the others of the same series.

I do not propose dealing with the direct process, as it is one not adapted for occasional use, such as we amateurs require, but is excellent for those who have to deal with large numbers of prints, as the professional worker, especially those who turn out hundreds of prints for some trade or art purpose.

The indirect process is one which is admirably adapted for the occasional worker, like an average amateur. It differs essentially from the direct in using two solutions separately instead of simultaneously, as in the direct, but the resultant in each case is the same, viz., sulphide of silver.

The difference lies essentially in modifications and variations of the processes, the chemical and physical changes involved are analogous; and if all things are strictly scientifically equal, then the resultants are equal from both processes and by all modifications.

Variations in the resultant are due entirely to unequal conditions, which point we shall hear more about further on.

The particular process I intend to dwell u on and to look carefully into is the one commonly used; in fact, it might be justly called the standard process, which consists of inverting the silver image on the bromide print by means of a mixed solution of ferricyanide of potassium and bromide of potassium in variable proportions; then acting upon it with a soluble sulphur, derived from a solution of sodium sulphide, and thereby converting the original black and white bromide print into either a beautiful or, alas, hideously toned print, according to the variation which individual taste desires and experience or inexperience produces.

The materials we have to work with and control are:

1. A bromide print.
2. Inverting or bleaching solution.
3. Converting or sulphide solution.

Not a very formidable array, and yet if we were to go thoroughly into them we should find enough material to fill seeral evenings.

I. Bromide Print

First we have a bromide print. This is a complicated structure, both chemically and physically, and to grasp its value properly we must refresh our memories as to its process of construction.

Bromide paper essentially consists of a piece of paper upon which is spread a mixture of silver bromide, gelatin, and starch. In addition to these primary and always-present substances, various makers add other items, such as a trace of iodide of silver, agar-agar, sugar, etc., which are there as modifications to improve the value of the emulsion either by increasing its sensitiveness to light or to improve its surface. Their presence or absence will not affect the general trend of our argument.

The silver bromide is what is known as a crystalline substance and gelatin a colloidal. These two are intimately mixed in the process of manufacture, and the colloidal body gelatin acts in two directions: it acts physically by separating the microchemical particles of silver bromide, and by some way or other partially combines with the silver to form what, for want of a better expression due to our imperfect knowledge, is conveniently called gelatino-silver bromide, a physicochemi al body, and thus it is seen it has a dual action, partly by loose chemical combination with bromide of silver, and also by its physical properties of separating these microparticles.

This physicochemical union is brought about in process of making the emulsion. The gelatin and the silver bromide are boiled for a long time (of course in the dark) and the sensitiveness to light is largely due to the extent of this boiling, which is called "ripening" the emulsion. The longer the emulsion is "ripened" the larger are the particles

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of silver bromide—due to agglomeration. When this emulsion is spread upon the paper support it really becomes a matrix of gelatin, in which is encased the silver bromide, highly sensitive to the violet rays of light. When development takes place we change the silver compound into silver metal in a state of very minute division, stated by some to be associated with variable quantities of silver oxide. The silver bromide which has not been acted upon by light is at first unchanged, though if we left it long enough in contact with the developer it would ultimately become reduced to metallic silver in precisely the same way as "light-exposed silver." This unacted-upon silver bromide is dissolved out by the "hypo," and we have left an irregular, undulating surface of silver, very thin on the high lights and very thick in the shadows, which constitutes the bromide print.

It is this superimposition of particles separated as they are by the colloidal matrix of gelatin which plays such an important part in this as in all chemical processes associated with a bromide paper. A large number of casual workers seem to be under the impression that the blackness of the silver deposit is merely one of area or superfices, that is to say, each particle is lying side by side only, and the blackness only due to the amount of light action and development on each particle. This is emphatically not the case in the "positive" or "print" such as we have to use, for it consists of layers of particles of silver heaped up on to one another and yet separated by the colloid gelatin. In fact, each particle of silver has an armament of gelatin around it. Slight as it may be, still it is there in a greater or less degree, so that it forms a cell wall to the silver, which is frequently termed a "cell," and it is these particles of silver we have to get at in our process if we desire to obtain this sepia tone.

Influence of Developer on the Resultant

There is one point which will arise in the mind of many. Has the developer any influence upon the quality of the resultant sulphided print? Every developer has a definite work to perform, which is the same for each one, and this is to change the bromide of silver into a deposit of metallic silver. Each developer acts differently, which we all know very well: some develop rapidly, some slowly, some equally, some unequally; but each developer produces the same result, but by a different road, and this resultant is metallic silver. In developing a negative the nature of this deposition of silver plays an important part, but not so in a print; viewed as it is by reflected light, some of the developers produce richer blacks than others, but this does not affect the resultant in any way when that resultant is sulphide of silver.

To demonstrate this point a series of graded prints were made of exactly the same exposure and on the same paper. These were developed by three of the chief types of developers used for paper—amidol, metol-hydroquinone, rodinal. Each print was then cut into half, one-half sulphided and the other left black-and-white as a control, and each print was developed to the utmost extent possible. These prints show no difference beyond that which can be accounted for by experimental error.

II. Inverting or Bleaching Solutions

At this point we must leave the bromide print, for enough has been said to enable us to enter the problem before us, and we must now consider the nature of the solutions we are to use. There are a large number of inverting solutions, and their many recipes can be found in any book on the subject. They are all based on one essential, and that is to make the metallic silver of the print into an insoluble salt of silver; what salt it really is does not matter, provided it is one which will react with the "converting solution," and also has no secondary action on the silver.

The formula most generally employed and which may be taken as the standard is a solution of ferricyanide of potassium, (a member of an exceedingly complex group of bodies) and a halide—bromide

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of potassium or bromide of ammonia. These two bodies react upon the metallic silver in an unknown way. The proportions between these two salts in making this solution are purely arbitrary and these proportion do, not represent in any way whatever chemical proportions.

The generally accepted or published recipes vary greatly, but taking the one as published in the *Photographic Almanac* as the standard we find that two parts of ferricyanide of potassium and three parts of potassium bromide are directed to be used, and the majo ity of workers weigh these salts with the most exacting care as though everything depended upon this accuracy of proportion. This is a totally erroneous fallacy. This may appear a bold assertion, but one I want to show is true; and for this reason I made a series of experimental prints, but before dealing with the experiments I would like to reason this point out with you. We have two data to start with: (1) To have chemical action you must of virtue have chemical proportions. (2) If there is no chemical action you have physical mixtures based upon the law of excess proportion in which the chemicals exert no action upon each other. Now with these two statements in front of us, let us see which we are dealing with in this solution. We have a mixture of two solutions of two neutral salts. We may make up separate solutions of each and mix them as we like and how we like, and can see no difference except in color, because obviously the colored ferricyanide, being mixed with the colorless bromide solutions, suffers dilution and so in color.

Now take a different type of solution. Take, for instance, the mixture of iodide of potassium and perchloride of mercury, such as you use for intensification. We mix these, a precipitate occurs; add more iodide of potassium, the precipitate is dissolved; add still more and no more precipitate occurs; why is this? In this case you have a direct chemical action taking place, and therefore require exact proportions, because you are producing a new salt quite different from the one you started with. In the ferricyanide and potassium solution you are not making a new salt, and it is quite possible to separate these salts from the solutions and obtain again the ferricyanide of potassium and the bromide of potassium.

It would be an easy matter to produce a large series of solutions in which there are no chemical reactions, and the salts are merely mixed upon the basis of the law of excess. It is equally easy to place before you a series of solutions which are chemical solutions and whose proportions are strictly chemical and not arbitrary, and whose efficiency depends upon accuracy. Precept without practice is no more good than capital without interest. I have made a few experimental prints to prove this theory, by taking a graded print which was cut into stripes, and using inverting solutions, one having exactly the reversed proportions of the other. There was no material difference in the sulphided resultant, proving that there is no chemical relationship between these two salts, and they are purely arbitrary proportions, just as the ingredients of a bottle of mixed pickles or the currants in a cake.

The converting solution essentially consists of what is known as an unstable sulphur body of the group called sulphides. All these sulphides give up their sulphur very readily in solution and this liberated sulphur is seized upon by the compound silver salt to form a very insoluble stable salt of silver, known as sulphide of silver. In the present case sodium sulphide is the one employed. When this is dissolved in water, partial dissociation takes place, sodium hydroxide, caustic soda, and sulphuretted hydrogen, commonly called "stink," are formed in solution. This sulphuretted hydrogen is the carrier of the sulphur which reacts on the silver of the print.

Another frequently employed converting solution is ammonium sulphide, which is a solution of a mixture of the various polysulphides of ammonium. It has the disadvantage of being alkaline and some papers blister (some very badly) in an alkaline bath, especially an ammonia alkaline one.

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The sulphide of sodium solution has a dangerous side to it, which lies in the fact that this sodium salt has the property of being partially changed into our friend "hypo" by oxidation. If this happens the hypo present dissolves out some of the silver salt and the resulting print is considerably weakened. This can be guarded against by washing the crystals of sodium sulphide with water before dissolving them, because the hyposulphite being a product of oxidation, the "hypo" is formed on the surface only and can be removed quite easily.

Having briefly reviewed (or shall I say inspected) our materials and refreshed our memories about their nature and substance we must plunge into the discussion of the actual method employed and try and obtain a concrete conception of the whole process. As it has been stated, the bromide print is really an undulated layer of metallic silver incased in a gelatin matrix, the particles being both separated and encelled. The first operation consists of inverting this silver into a salt capable of reacting with the sulphur.

You flood your print with the inverting solution and gradually the black image changes into a bleached image. Now what has happened? The solution has first of all had to penetrate the gelatin wall, which it does in two ways, by microdiffusion through the porosity of the surface, or by microfiltration through the interspaces of the gelatin wall itself into the cell, where it reacts upon the metallic silver to form an insoluble complex salt of silver.

If this process is considered in the right way, which is, that the print consists of layers of silver particles, we at once see that time must elapse before the bottom particle of the metallic silver becomes reacted upon. This is demonstrated at once by the fact that the high lights rush away and the deep shadows are the last to be completely changed.

III. Converting or Sulphide Solution

When this process of inversion is considered complete you rinse the paper and subject it to the sulphide or converting solution; and with a rapidity far and away greater than the "inversion" required, the "conversion" is accomplished. Why? Simply because the gelatin is now well soaked and the solution has a better opportunity of reaching the silver salt by osmotic action, and reacting with the halide and displacing the resulting potassium salts of the reaction. These are very soluble and so are quickly returned to the solution by reversed osmotic action, and you have your toned bromide as your resultant, provided all has gone well.

How often does everything go well? What disappointments are met with! Sometimes nasty, biliously prints, as though we were advertising mustard or margarine; at other times big blotches of a different tone value or blue spots and blisters—all crop either individually or in combination, and our longed-for, hoped for, muchly desired sepia print lights the fire or our pipe of miscontentment. These errors (for after all what are they but errors?) are often, in the language of a schoolmaster, gross, careless errors, and deserve no pity, but severe censure. These errors should not happen if the process is understood. Taking them "seriatim" and studying them briefly, we shall then be able to realize what does happen.

Washed-out Mustard-color Nondescript Tones

This trouble is generally due to one factor, imperfect, faulty development. If you "overexpose," which is not exceptional or unusual but none the less wrong, and then develop, you find that your print rushes up, and you withdraw it and pass into "hypo" quickly to save your picture. So you do, so far as a black-and-white print is concerned; but if you proceed to sulphide tone it you obtain a miserable failure. Why? The reason is not far to seek. When you are developing, you are acting at first on the outer layers of celled silver bromide, and by removing it to the "hypo" bath, to prevent it becoming too dense, development is arrested when

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only these top layers are acted upon, and the "hypo" dissolves the lower strata away, leaving a comparatively thin layer of silver to constitute your print. This when sulphided is too thin to show proper depth of tone, and the result is a washed-out, biliously looking affair. The remedy, and in fact the correct procedure, is to employ a fully but not over-exposed print and then develop it to the very fullest extent, in fact until the high lights show a tendency to fog. In this case you have the maximum amount of silver deposit of such a thickness that your picture when sulphided is full of tone value. This is the ideal print to work with under all conditions for this process.

Blotches

Frequently these arise even with a perfectly exposed print. I have gone into this matter pretty carefully myself, by making trial prints and then making one go wrong. It is all very well for any worker to say what is wrong and how to avoid it, but unless he can produce the trouble he has not become master of the situation. What I mean is this: that it is all very well to theorize about any trouble, and to dogmatize that it is due to this factor or to that; but to prove it I maintain that you must be able to deliberately produce a print with these failures in the same way as you would set about producing one without. Until you can do this I do not consider you are master of the subject. It is a simple matter to say that the blotches are due to uneven development; but that this is so, I purposely developed a correctly exposed print unevenly and then toned it. The black-and-white print showed no apparent faults, but the sulphided print did so at once. The reason is an obvious one: that the portion of the print which had, say, fifteen seconds more development than the rest, by flowing the developer on unevenly or by using too little, had an advantage of fifteen seconds' development over the rest of the print. This dose should not show if you fully develop the print, but only in those prints in which exposure was slightly excessive and development arrested before full penetration had been allowed.

You then get that portion which had this increase of action having a greater thickness of silver particles which when altered by the sulphide becomes optically apparent.

So then this fault is due to using a slightly over-exposed print, unequal, careless, and arrested development.

Blue Spots

These are due to circumstances not so easily controlled. The local water supply comes through iron pipes, is stored in iron cisterns, and small inobservable particles of iron get detached and enter into our solutions, and directly the ferricyanide comes into chemical contact with them a blue patch is formed, and the retouching knife is the only remedy, unless of course you can afford distilled water stored in glass. One remedy suggested, but which I have never tried, is to tie a piece of flannel over the tap from which you get your water, but I am skeptical.

Blister

These bugbears can be eliminated quite easily. They are due to the fact that the sodium sulphide dissociates in solution into hydrogen sulphide and caustic soda. If your solution is too strong you have an alkaline bath acting upon a sodden gelatin matrix. Most probably, if the solution is made at the time it is required to be used, it will have a lower temperature than the washing bath, and the sudden contraction and expansion of the film occurs, and at the point of least cohesion with the paper the blister is formed. Some papers are more prone to the formation of blisters than others, and it is difficult to say precisely what the remedy is, except that your solution must be fresh and not too strong.

Control

I have heard this question asked in this room: How long do you keep the print in the inverting solution? and the

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answer was: "Oh, until it is completely bleached!" Certainly you can do so if you like, but if you really grasp the nature of this process there is no reason why you should. When discussing the action of the developer on the encased silver bromide, it was seen that the depth of action was in direct proportion to the time of development. This is a most essential point to bear in mind in this as in all photographic processes: that the longer the action is allowed to take place the deeper it will be, until of course complete, and if I might be allowed here to say it, the action is not complete until the last particle of silver halide is decomposed. By this I mean the unexposed as well as the exposed, and in all cases of development, whether plates or paper, it is all a matter of judgment when development is complete, because if you have sufficient developer to act upon the encased silver salt you will ultimately reduce the whole of the silver salt to the metallic state, and it is the exposed portions which develop first. Ultimately every particle will be acted upon; so therefore this axiom, that depth of action is in direct proportion to the time, is true.

So much for this theory and fact, but apply it in practice. The bromide print is one in which you have an incomplete area of silver, while in the undeveloped paper you have a complete area; otherwise your conditions are relatively comparable. When the inverting solution is applied it starts to work on the outer surface and gradually penetrates by microdiffusion to the lower layers. This action is considerably slower than in the case of development because of blockage which occurs, due to the fact that instead of making a smaller substance you are increasing the quantity. You end by making a very complex molecule by adding to the silver the ferricyanide and bromide, thus, so to speak, choking the upper surface and retarding the rate of diffusion to the lower strata. Having studied that proposition, why should we invert all the particles of silver? Is it reasonable or logical? I would advise all workers to cut a print into four to six strips, give them different times in the inverting solution, then sulphide, and see for themselves and prove to their own satisfaction what a ridiculous dogma it is that it is essential to invert the whole of the image, or, as it is called, "bleach right through." Withdraw your print when you think fit, and, believe me, it is entirely a matter of judgment and personal predilection how far this inversion is to be allowed to proceed, and there is no scientific basis for complete inversion. All sorts of very delightful or hideous brown tones can be obtained by partial inversion of the silver, because you have the black silver deposit lying underneath, and this, associated with the sulphide of silver, gives a richness to the tone which although pleasing to some may be distasteful to others, for, after all, tone colors are all a matter of taste and not science.

This system of control is capable of a great development and only requires a little practice and judgment. Decide beforehand what tint you are to aim at, and then be determined to get it. Make your print to fit your process, and your process to meet your tastes; realize that you and you only are to be the master of the situation and not the process, and that the process is merely a tool in the operator's hand.

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THE JANUARY OPPORTUNITY

PROMPTED by one motive or another, the average adult, if left to his or her own sweet will, can be depended upon to use a certain limited number of photographs each year without any particular prodding or stimulating in the way of direct advertising.

The work that was turned out for Mrs. A., B., or C., last season, or the photographs of the young actor or business man that created a spasmodic interest, may always be counted upon to bring a small amount of business to the photographer who made them. The bulk of this business will probably have been placed by the time this article comes under the eye of the reader, and the average photographer will feel that he is doing a fine business when he foots up the sales of the two months immediately preceding the Christmas holidays. It should be remembered, however, that the holiday trade does not represent a fair average of the year's business. It is due to a special condition, and may fairly be said to represent the high-water mark of all the combined advertising the photographer may have done during the previous twelve months. It is the fruit of all his publicity methods; his paid advertising; his show case displays, and all the indirect methods he may have employed to keep his name and fame before the people of his community; in fact, the sum total of his activity as a business man and an artist.

The natural tendency of business after the holiday season is to show a marked falling off from the record of the previous months. This tendency should be taken in hand at once if the corrective is to be applied. The falling off should be prevented before it occurs rather than remedied afterward, and any method which will effect this is good advertising.

The work of the holiday season should have produced an unusual number of choice specimens, and should include a greater or lesser number of subjects in which the general public will have more or less interest. The photographer should not fail to take advantage of any and every opportunity to make use of such subjects.

It is, of course, impossible to publish them broadcast; but in most cases a very creditable display of them could be made on the walls of the studio, and an exhibition of such work should attract a great deal of attention and comment if properly carried out.

Let the photographer, so soon as the rush of the holiday printing is over, make a representative collection of the best work—including, of course, the most prominent people—that his studio has produced during, say, the past six months. Make a very careful set of prints on the paper and in the style that is best adapted to each particular subject, and arrange a display which includes only these subjects, running his exhibition through a period of several days or possibly weeks.

Let him see to it that the display is noticed in all the local society papers, and as widely advertized as possible by word of mouth, and by local reading notices in the press. Invitations should be sent to every one whose portrait is included in the collection and to as many more prominent and influential people in the town as can be reached by personally addressed mail matter. The invitations for such an exhibition need not be expensive, but they should be neat and in perfect taste.

There will be no better opportunity during the year for the selection of material than will come at this particular time, and probably no better opportunity in the printing-room to carry out this project. The expense will be inconsiderable, and the result will justify every dollar expended.

Another publicity plan that offers peculiar advantages at this particular season is the mailing to a selected list of names of a neat calendar for the

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By THE WHITE STUDIO
NEW YORK

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coming year, bearing distinctly upon photography and its claims upon the public support. Such calendars may be found in stock designs, or may be prepared at trifling cost in such a manner as to be attractive in every way. The principal value of such a mode of advertising as this lies in the fact that the calendar is in practical use throughout the entire year, and will be more apt to be kept where it comes daily under the eye of the family than almost any other method of advertising that can be named.

The importance of keeping alive the business which has been active during the holiday season is self-evident, and it only comes to be a question of the method to be adopted. Unless something definite is undertaken in this direction, we must content ourselves with such business as may come from the efforts of the past, and repeat the experience of last year and the year before, with their cycles of dull times and occasional spurts of better business, with their alluring but unreliable prospects of increasing prosperity. These prospects are only to be realized by persistent effort and a definite policy steadfastly carried out, by which the idea of PHOTOGRAPHS, PHOTOGRAPHS, PHOTOGRAPHS is driven home into the innermost consciousness of every intelligent being in the community.

There is much in the doctrine of suggestion, and the merchant whose wares are constantly brought before the attention of his buying public is steadily developing by suggestion a demand for his goods. By putting new thoughts into the minds of those who read his announcements he creates a new interest and presents the qualities of his goods in a new light. He strikes a variety of keys which find response in the different personalities to whom he appeals. With every presentation of the subject in a new light he fastens in the mind of his reader a new thought concerning the desirability of his goods, and it is in the accumulation of new points of view, new ideas of attractiveness of value that a desire grows for their possession.

So may it be with the photographic studio, and so must it be with the progressive and successful one. By changing the nature of his attack from time to time, by phrasing his announcements in different language with each public statement that he makes; by carefully bringing his name and business before the public under various guises and in various connections, but always with the ring of something newsy and interesting, he establishes himself in a stronghold of popular favor from which he unconsciously dominates the public will. An influence that is almost hypnotic attaches to many of our successful advertisers who, by the very nature of their advertising, create business through suggestion.

It is business of this sort that the photographer wants; the new business that has lain dormant because of lack of stimulus.

The people in a community who are most likely to respond to this stimulus of suggestion will be found in the well-to-do class with money to pay for their fads and fancies.

If this be true, the field can be worked to advantage. It should be worked at once and persistently if the tide is to be kept from ebbing.

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EXPOSURES FOR BROMIDE ENLARGEMENTS

By ANKETELL HENDERSON, F.R.N.A.

WITH the aid of a simple scale which takes only a few minutes to make, a good candle, and a small piece of colored glass, the measuring of the proper exposure for bromide enlargements is one of the simplest operations in photography.

Before making measurements, a unit of measurement must be adopted. Dr. Mees, in his valuable paper published in December, 1913, in this JOURNAL, adopted the British and American candle foot as the measurement of light intensity and it is a most convenient one.

It is well known that although the illumination of a surface which is given by a candle at a distance of 1 foot is 1 candle foot, the illumination at 2 feet distance is only $\frac{1}{4}$, and at 3 feet is only $\frac{1}{9}$, the law being that the illumination decreases inversely as the square of the distance, so the first requisite of easy and quick measurement is a scale of inverse squares. This can be made in a few minutes on a wooden lath (such as a cloth blind lath), or on the blank back of a linen tape measure, and 3′ 6″ is long enough. At 1 foot from the zero end mark 1, and at 2 feet mark $\frac{1}{4}$, and at 3 feet $\frac{1}{9}$. Fill in intermediate divisions as follows: Mark 16 at 3 inches, 9 at 4 inches, 4 at 6 inches, and 2 at $8\frac{1}{2}$ inches.

For fractions of the unit mark $\frac{1}{2}$ at 17 inches, $\frac{1}{3}$ at $20\frac{3}{4}$ inches, $\frac{1}{5}$ at $26\frac{3}{4}$ inches, $\frac{1}{6}$ at $29\frac{3}{8}$ inches; also $\frac{1}{7}$ at 32 inches, $\frac{1}{8}$ at 34 inches, $\frac{1}{10}$ at 38 inches, and $\frac{1}{12}$ at 42 inches.

A candle set at any mark will illuminate a screen set at zero, and on a white screen give a tone corresponding with that mark, and it is useful to learn to appreciate the tone values given at the different distances. A candle set at the last ($\frac{1}{12}$) mark will give $\frac{1}{12}$ of a unit tone at the zero end, and we will use the scale first to ascertain the speed of the sensitive paper or plate we intend to use.

Speed of Paper. If we place a piece of this sensitive paper, etc., say half a quarter plate in a printing frame at the zero end, and, by means of a card drawn along the front $\frac{1}{2}$ inch at a time, expose it for 6 successive 2 seconds to a candle at the other end, we obtain strips that have had exposures of 2, 4, 6, 8, 10 and 12 seconds. The most exposed strip will receive 12, equal to 1 unit of light for one second, and the others respectively $\frac{5}{6}$, $\frac{2}{3}$, $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{6}$ of a unit for one second.

On developing this paper in the usual developer for the average time, it will show, if rapid enough, deposits of different densities, and the exposure at which the first well-marked deposit appears can be taken as the speed of that paper in candle feet seconds. For this speed I suggest the term "inertness." Practically $\frac{1}{12}$ of a second exposure at one unit distance may be taken as equivalent to 1 second exposure at the $\frac{1}{12}$ mark and so on.

It is rare to find a bromide paper so slow as 1. The usual rapid is $\frac{1}{2}$ to $\frac{1}{3}$, and extra rapid may go to $\frac{1}{6}$ or $\frac{1}{8}$.

Should the paper speed be known to be slow, better perform the operation at mark $\frac{1}{6}$ and give successive exposure of 3, 3, 2, 2, 2, seconds, which will correspond with speeds of 2, $1\frac{1}{2}$, 1, $\frac{2}{3}$, $\frac{1}{3}$ units. As experience is gained, the exposures at mark $\frac{1}{12}$ can be made successively 3, 3, 2, 1, 1, 2, which will correspond with exposures $\frac{1}{6}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 unit. This test of speed can be made including development in about 3 minutes.

It is a good practice to test a sample of all new papers bought and endorse the speed or inertness on the packet or box. Remember that the speed of a paper diminishes with age after the packet is opened, and, in using an old paper, treat it as one of reduced speed.

Enlarging. When enlarging we have projected on the easel an image of the

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negative in varying tones, like those produced by a candle at different distances, and the darkest of these tones as a rule should not produce a visible deposit on the sensitive paper or plate, and the second darkest should produce a visible deposit. Having measured the speed of the paper, as just described, we proceed to measure, say, the darkest tone on the easel. This is very simple, and it is best to start with a very thin negative.

Hold a thin pencil or penholder about $\frac{1}{2}$ inch in front of the darkest tone on the easel, and it will cast a dark shadow on that portion. Now cast another shadow adjoining it by holding a lighted candle at one side of the enlarging lantern. The first shadow will then be illuminated by the candle, and the second shadow will be illuminated by the darkest tone of the negative. Move the candle nearer to the easel or farther away until the two shadows are of equal intensity, or tone, and measure with the scale from zero to candle. With the thin negative this will generally be within the limits of the scale $\frac{1}{1}\frac{1}{2}$, but with a dense negative the distance of the candle might be inconvenient and difficult, being excessive.

Another difficulty is that the colors of the two shadows are generally different, the shadow illuminated by the candle being more yellow or brown than the other. Both difficulties are gotten rid of in the simplest way. Alter the color and reduce the light of the candle by interposing between it and the easel a light blue glass, which will only pass a fraction (a good proportion is $\frac{1}{1}\frac{1}{0}$) of the light, and this will get rid of the color difficulty, and lessen the distance of the candle from the easel, and enable very dark tones to be measured.

If the blue glass passes $\frac{1}{1}\frac{1}{0}$ of the light the $\frac{1}{1}\frac{1}{2}$ mark will become equal to $\frac{1}{1}\frac{1}{2}\frac{1}{0}$. The writer has a few old negatives for which he requires glasses as dark as $\frac{1}{2}\frac{1}{0}$ or $\frac{1}{3}\frac{1}{0}$, which makes the range of the scale $\frac{1}{2}\frac{1}{4}\frac{1}{0}$ and $\frac{1}{3}\frac{1}{6}\frac{1}{0}$.

Exposure for Enlargement. Supposing the darkest tone on the easel to be $\frac{1}{6}\frac{1}{0}$ unit, and the speed of the sensitive paper $\frac{1}{3}$, the relationship of those two numbers will be 20, and 20 seconds' exposure for the enlargement will just give a marked deposit after development, provided that the actinic or chemical power of the lantern light is the same as the candle used for testing the paper. Generally it is great, but not so much greater as the difference in color would indicate, for much of its actinic power is absorbed by the condenser and lens. I find that a deduction of $\frac{1}{8}$ to $\frac{1}{1}\frac{1}{0}$ of the calculated exposure, say from 20 to 18 units, suits my lantern, which has an inverted gas mantel.

So far we have assumed that we measure the darkest tone, and that a marked deposit is required in the enlargement to correspond with that tone. If white is required for that tone, we must measure the second darkest tone, or make a further allowance such as a deduction of $\frac{1}{6}$ or $\frac{1}{5}$ from the calculated exposure for the darkest one. One trial with an average negative will give confidence and indicate the allowance to be made. These methods of measurement are not nearly so difficult as they read, and once mastered the only difficulty in enlarging is choosing or obtaining paper of the proper gradation to suit the negative. This is common to all methods of enlargement—a thin negative generally requires a slow paper and a dense negative a rapid paper.

To ascertain the value of the blue glass, set the candle with the blue glass at mark 2, and with pencil or penholder cast a shadow on a white screen at zero. Cast another shadow adjoining it by a similar candle without blue glass, and move this candle nearer to the screen, or farther away, until the two shadows are of equal intensity or tone, and note the mark on the scale. Suppose the mark be $\frac{1}{5}$, the relationship of the marks will be 10, and the blue glass will transmit $\frac{1}{1}\frac{1}{0}$ of the light. If the mark be 6, the relationship will be 12, and the blue glass will transmit $\frac{1}{1}\frac{1}{2}$. Change the candles and test again, and adopt the mean of the measurements. For darker blue glass, set the candle with the blue glass at mark 4.

For testing the speed of papers in

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the printing frame a glass front is required, and it is an improvement to gum a strip of black paper about ¼ inch in width along the centre. Discoloration behind this strip indicates that some or more restrainer in the developer is necessary with that paper. It is a still further improvement to make a printing frame into a rough, dark slide as follows: Along the two sides of the frame glue ½ inch strips of thick card about $\frac{1}{10}$ of an inch thick, and on these ¼ inch strips of same thickness. Upon the latter strips the glass front will rest, and between them a thinner card will slide as a shutter. Rule lines ½ inch apart on this shutter.

To hold the blue glass some form of lantern is convenient. A tin lantern for candle costs about $2.25, and will hold a ¼ plate of blue glass, and one of orange. The latter is useful in a developing room.

As to candles: Select a brand that gives a uniform flame. You need not go to the expense of standard candles. A sample of stearine small carriage candles twelve to the pound, obtainable here, gives a most uniform flame.

Lastly, you do not need to measure for every enlargement. You will soon get to appreciate the values of the various tones, and need only measure at the commencement of a batch or for unusual negatives. All bromide papers I have tested have sufficient latitude to give good results notwithstanding small variations in the light given by commercial candles.

TONE VALUES: WHAT THEY ARE AND HOW TO OBTAIN THEM

FIRST, as to what tone values are for, it is necessary to have a clear idea of what one is aiming at before deciding on means of attainment. Tone, as applied to paintings, refers to the general effect, and depends first on the right relation of objects in shadow to the principal high-light; second, to the quality of colors. It has come to be synonymous with depth and richness in the picture. Photography, if we except screen-plate work, is dependent for its effects on monochrome, *i. e.*, on one color only in any picture. Color results are being experimented with, but so far without any marked success—in fact, the tendency is to weaken the result. Where a fine monochrome has a charm all its own, a colored oil print, produced *via* the lens and photographic plate, compared with the painting it emulates, is a poor affair, second-rate at best. Hence, to secure the best results in our monochrome print it is essential that we preserve not only the proper balance between high-light and shadow, giving due place to all the intermediate grades, but that we also endeavor in that monochrome to reproduce to the best of our ability the quality of color in the scene pictured—a by-no-means easy task, and one that the ordinary dry plate is quite incapable of, as any photographer must realize—that is, if the print produced by that medium be carefully inspected. The question then arises—the question that some of the foremost scientists of the century have given their lives to solving, and which others, working on their results, are today endeavoring to perfect—is, "how to correct the dry plate that it may give tone values that will most nearly approximate to the scene pictured." It is impossible to render accurately in monochrome both the color contrast and the correct values of light and shade. It then follows that we must sacrifice, to a certain extent, one to obtain the other. To correctly render the scale of colors—greens, blues, reds, etc.—we must sacrifice to some extent the light values of the picture. Which must be sacrificed depends largely on the subject and the

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method in which it is to be treated, *i. e.*, the effect to be produced in the finished picture.

By making certain corrections in dry plates, the technicalities of which it is unnecessary to enter on here, much more correct color representations in monochrome can be secured. Such corrected plates and all roll films are said to be orthochromatic. They are also much more sensitive to red light, and, in handling, need to be shielded directly from the rays of the dark-room lamp to avoid any danger of fogging, owing to their supersensitiveness.



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RUPERT BROOKE

Further correction of these, or the plates and films, is secured by using colored filters of different densities, which cut out certain rays of light, or by the use of non-filter or anti-screen plates. The use of light filters lengthens exposure by two to twelve times; the use of non-filter or anti-screen plates also necessitates a longer exposure than with an ordinary plate. The majority of photographers consider ortho-plates a necessity for all color-correct renderings and all pictorial work; many go further and use a still more heavily corrected plate—the panchromatic. With this is used either a special yellow or red filter or two filters combined. This plate is sensitive even to the rays of the dark-room lamp, and, unless a special safe lamp be used, must be handled, loaded, unloaded, developed, and completely fixed in total darkness. This, with thermo development, is not a difficult matter. In fact, the way the plates, not to mention ordinary ones, are mishandled by rash exposure to the rays of the red lamp is the cause of much of the fog seen in negatives.

The plate to be used depends very largely, as has been said, on the subject treated; in some cases altogether so, but with some subjects photographers divide. In landscape work, for instance, ortho plates or film, with a two to five times screen, are most largely used. Still there are some pictorialists who prefer the ordinary plate, as giving a simpler rendering and a better atmospheric effect. The work of some of these undoubtedly justifies their contention; but they are masters in the art, experts in exposure, and with large experience in the technicalities required to produce certain effects in the finished result. The amateur aiming at correct color results will find that ortho plates or films, with either a two or five times filter, more possibly the non-filter type of plate, as giving greater latitude in exposure, will give the best results. Where snow scenes are attempted a stronger screen is of advantage. It must be remembered that in dealing with landscape work in Australia the scale of contrast is far more marked than in England or in Germany.

It must equally be borne in mind, that mist, *i. e.*, water vapor in the air, plays a large part in landscape work. The stronger the screen used the more the mist will be cut out, and hence there will be, to a more or less extent, a loss of atmosphere. It is possible, therefore, that in endeavoring to secure color-correct effects, we may lose the pictorial results we are aiming at, and we must therefore compromise. Exaggeration—over-correction—must be avoided. This over-correction effect is often produced by under-exposure with a low-power screen, not by using a too-high-power one. If the even more highly sensitive panchromatic plates are used, the use of a X2 Yellow Filter K special screen is ample for most work, or we are apt to

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find ourselves with a placid summer landscape backed by a thunder-storm sky.

Turning to indoor work, portraiture, and all work involving colors, ortho plates are practically indispensable, unless heavy retouching is to be done, and the average worker is not, as a rule, a skilful retoucher. In fact, for indoor work involving much color contrast, pan plates are well worth the extra money spent on them. They are invaluable for a freckled skin, give much softer and more pleasing portraits of elderly people, and are vastly more sensitive to artificial light than any others. Here it is a case of considering the results aimed at. If, for instance, one were making a study of a summer boy, with a view to getting a character picture, "Freckles"—the pan plate would spoil the very result that the worker aimed at, since it would cut out most of the sunspots. In dealing with copper-colored hair, however, pan plates are ideal, as they give far and away the best rendering of this color, and, in addition, render the texture of the skin to perfection. A two-times screen should be used. A fast lens, not less than $f/6.8$, is required, as the exposure required is rather lengthy. In dealing with interiors and the photographing of flowers, or copying faded and spotted copies, the pan plate scores heavily. This is especially noticed in treating woods where the grain is to be reproduced, in the handling of oil paintings, red hangings, etc. A panchromatic plate, with a fairly deep screen, will give the only approximate accurately correct tone values possible in such cases, and, at the same time, blemishes are cut out to a remarkable extent. Mention might be made of the fact that in using a plate like the pan plate, the filters used should be those advised by the makers of the plate—despite the average worker's practice to the contrary. Any filter will not give equally good results with any brand of plate—especially is this so with such a supersensitive plate as the panchromatic.

To sum up our results, briefly, then we find that:

1. Tone values consist of light values and color contrasts.
2. That one must be sacrificed more or less to obtain the other.
3. That we must judge which to scarifice—

(*a*) According to the subject.

(*b*) According to the results we are aiming at.

4. That a filter which would give color-correct results with one plate would over-correct another.

Using these premises as experimental data, we are in a position, by adjusting our plate, our screen, and our exposure to the subject in hand, to get a series of results that will enable us to render our monochrome results far more faithfully to nature, and of a much greater pictorial quality.

In conclusion, it might be mentioned that color screens are sensitive to light and should be kept carefully shielded from it save when in use. Equally, they should be kept clean and free from dust, and particularly the gelatin one handled very carefully, as they scratch easily. A word of warning, also, to telephoto workers: considering the great length of focus of high-power telephoto lenses, ordinary glass screens are worse than useless. The screens used must be either plain, uncemented gelatin, or special optical flats. Either will give good results.

Pictorialists in camera craft should study carefully any good examples of either paintings or photography they can gain access to, and notice how the masters of the art balance their tone scenes. Where it is impossible to reach the originals, good reproductions in book form are most helpful. Example is better than precept—better still, practice, based on the assimilation of both; for to sadly misquote some very familiar lines, the best road to successful photography is "To rise on stepping stones of our spoilt plates to higher planes." —*Harrington's Photographic Journal.*

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OVER FIFTY YEARS OF PHOTOGRAPHY

By DAVID BACHRACH

PART II

MY introducer into photography was Mr. Robert Vinton Lansdale, a rather noted photographer, and our place was next door to the "Whitehurst Studios" at the time. Mr. Lansdale, however, was different from most of these leading artists, more intelligent and full of the experimental spirit, which suited me exactly, and further, he was a man of high moral character and free from the scandals connected with some of the leading photographers. He thoroughly understood the technic of the business and was fairly artistic. I kept up my friendship for him until he passed away.

Before proceeding farther into the peculiarly photographic experience of fifty years, it may be of interest to give some of my experiences, as a subordinate, during the civil war. After my apprenticeship to Mr. Lansdale was over, I was employed, at the age of sixteen, by Mr. William H. Weaver, an ornamental painter who had made a specialty of outdoor photography and was employed by *Harpers' Weekly* at times. On account of the chemical and technical experiments made by the influence of Mr. Lansdale, to which I was naturally adapted, I found myself knowing more about that part than the employers I was with, and, as a result, I had my own way and was hardly an employee at all, having made personal friends of all of them, particularly with Mr. Lansdale, Mr. Weaver, Mr. Chase, and a few others.

On the first army commission Mr. Weaver sent me, besides the photographing of the camps, Fort Federal Hill, etc., around Baltimore, I was sent to photograph the first camp of negro soldiers raised in this State. It was the brigade of General William Birney, situated at Benedict on the Patuxent River, and the photos were first ordered by the Harpers. It was my first real camp-life in a photo tent. In a short time they were ordered to Jacksonville, Fla., and I was eager to go, but the brother of Mr. Weaver, a married man, thought there was too much danger of fever, and did not have stock enough, etc. I was already on board the steamer *General McClellan*, and had to abandon it. As making tintypes of the soldiers at a dollar each was a very profitable business, and the brigade became a division, we each lost a small fortune by not being bold enough. Had I been a little older I would have gone anyway. They were stationed down there until General Grant made his march on Richmond.

My next war experience with the army that is worthy of note came when I was sent to Old Point on the steamer *Georgianna*, on a pass from General Butler, in order to get a location down there. It led to a peculiar experience. General "Baldy" Smith's corps was being moved on transports from Yorktown on the York River to Bermuda Hundred on the James, not far from City Point, and I was watching the fine spectacle of steamer after steamer with its loads of troops when the 8th Illinois cavalry came on board. I asked Captain Pearson where they were going, and he said just probably to the Newport News camp, and told me to stay aboard, so as to go back after my business at the Point was finished.

The colonel of the regiment, however, took charge, and before I knew of it we went right up the river, past the wrecks of the gunboat *Paul Jones*, the first vessel blown up by a torpedo, and also the *Merrimac* wreck, just blown up. We landed at Bermuda Hundred, and

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I was treated to about the finest specimen of profanity by the officer of the day, who wanted to know, interloaded by about all the oaths I ever heard of, "What in ——— business I had there!" as no correspondents or civilians were allowed, the movement being secret. I was to be put in the guard-house, or tent, court-martialed, and a whole lot of other things. It amused me, being but a boy, so I told him all right and asked if he had any hard tack, as I was hungry, having had nothing all that day. He finally gave me a pass to return on the boat the next day, and I had a chance of seeing the move on Petersburg inaugurated. It looked like there was going to be "something doing" of a very lively type, and most of the garrison at Fort Monroe was sent to the front, Mr. Weaver concluded not to risk the enterprise. I must also mention that previously I had been sent with a part of General McClellan's army, and marched through a part of the Chickahominy swamp.

In a few months' time I was sent to help out a photographer who was encamped at Fort Gilmore, formerly Fort Harrison, when the Confederates had it. It was between two and three miles of Drury's Bluff, on the line of the famous Dutch Gap canal, about a mile from James River. And by the greatest coincidence it was the command of the veritable General Birney again, and I felt at home. We were only about three-fourths of a mile from the picket line, and the "daguerreotype man," was a favored individual, and I had frequent permits to go to the line. A. P. Hill's corps lay directly in front of us, and I have seen the pickets meet and exchange Lynchburg tobacco for coffee and Richmond for New York papers. Picket firing was suspended by mutual consent for a long time.

Well, on the night the rams came down from Richmond and were repulsed, the darkies got very enthusiastic and went up on the ramparts and cheered. My employer had gone to Baltimore for stock, and I slept in the tent alone, when on the night in question, between three and four in the morning, an orderly put in his head, saying: "Say, mistah 'guerreotype man; General Birney says der is go'n to be h——l to pay directly, and to git out an' go to de bomb-proofs." I was very sleepy and told him to go to a rather warm place and went to sleep again. In about a half-hour, I presume, I was awakened by the most terrific cannonade I ever heard—forty to fifty pieces of Hill's artillery and the big mortar shells of Drury's Bluff all playing at once.

I dressed as quick as I could amid the shrieks of the shells overhead and rushed out for the bomb-proof. General Birney and staff were on the ramparts with glasses and took a quiet laugh at my dodging shells already passed. I stayed in the bomb-proof just five minutes, when the smell of darkey, tobacco, and some bad whisky drove me out and I took the chances. General Birney called to me to take the flag off our tent, as they would take it for headquarters. I was about to comply when a shot took off the pole completely. It was all over in an hour, and, outside the waste of ammunition, the result was nothing. Most of the shells fell and exploded beyond the ramparts, and the largest number went so deep in the sand that they did not even explode. No reply was made from our side. In the year 1900 I met General Birney in Washington. He still had a photograph in good condition of himself and his brigade officers that I made in 1862 or 1863. He died at the age of eighty-seven years. His father was the first abolition candidate for President.

Two more of my many experiences are worthy of record during the Civil War. My employer was called on by a photographer sent by the Harpers to aid in photographing the dedication of the Hill cemetery at Gettysburg. I took the portable dark-room and drove over the hills by way of Westminister and Emmittsburg, a day and a half being consumed, and did the technical work of photographing the crowd, not with the best results with wet plates, while Mr. Everett was speaking. After this hour and a half of oratory, Mr. Lincoln got up (I was on a temporary

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stand about ninety feet away), and in about three minutes delivered his famous address, which drew no demonstration and was hardly even noticed by the current papers—the greatest piece of English composition, both in sentiment and construction, ever delivered—and it was some time afterward before it was recognized. The negatives, 8 x 10, were of no real interest, I then thought, and the gentleman took them for the woodcut artists.

But the most important of my war experiences was the following: I was sent to help the photographer at Camp Pawle, late in 1864, out of some chemical difficulty, when Major G. S. Palmer, surgeon-in-charge of St. John's College Hospital, at Annapolis, nearby, came up and asked if I would take an appointment as a member of his staff, with the rank and pay of lieutenant, for three months, to photograph some cases among the Andersonville prisoners then arriving in exhange. I accepted this at once, but as I was under age the actual commission was not made out (being of the staff), but the pay was all right. In fact I had no ambition for military rank.

A photo studio was fixed up, and as I had no regular large portrait lens I used the front lens of a quarter-size Darlot for the work very successfully. I had not then heard of the use of such a lens. To give samples of orders—unfortunately the few papers I had preserved were all lost or destroyed, not considering them of any value.

Acting Lieutenant D. Bachrach, Jr., will have the body of A. B., Co. — and — Regt., taken to the photograph gallery and photographed. Case, chronic or camp diarrhea. The sergeant of the guard will obey his orders and have men detailed to carry them out.

(Signed) G. S. Palmer,
Major and Surgeon-in-charge.
A. H. Tremaine,
Executive Officer.

Major Palmer was from Maine, a very enlightened and progressive surgeon. Dr. Tremaine was an Englishman. If the man was dead, an order to issue chloride of lime was attached, and the order to the sergeant-at-arms was necessary, because they had kicked at having to obey a mere boy. The negatives made and prints finished, all were sent in and the order countersigned by me and taken finally to the surgeon-general's department.

Without mentioning other uninteresting details, shortly after the war was over, Captain Wirtz was put on trial by court-martial for cruelty to the prisoners, and four of these very pictures I had made were published by the papers as evidence. Now, the facts were, that out of the twelve hundred we had at the hospital, there were only sixty of such cases, and each one was put down as due to sickness, some from venereal diseases. Of course, I was indignant, and wrote a protest to Secretary Stanton. Not hearing from him, I went over to see him, and I was not allowed to do so, and intimation was given that I might be given a term in the "Old Capitol" prison. I went to General Hancock, who, after hearing my story, sent an orderly with a note with me, and I was then admitted to Stanton's presence. After hearing my objections to the pictures as evidence, I shall never forget the harsh tones in which he informed me that he did not consider any one justified to act in "giving aid and comfort to the enemy" after receiving the pay of the government. My reply that I had rendered full value for all I had received, and was under no obligation to have my work used to misrepresent conditions, only brought forth the answer that in these times I had better keep quiet. Anyone living at the time knew what that meant, and, while I do not even now know whether Captain Wirtz was executed justly or not, I felt I could do no more. I was not anxious to figure as a disloyalist. I was willing to go on the stand in the trial, but my people would not allow it.

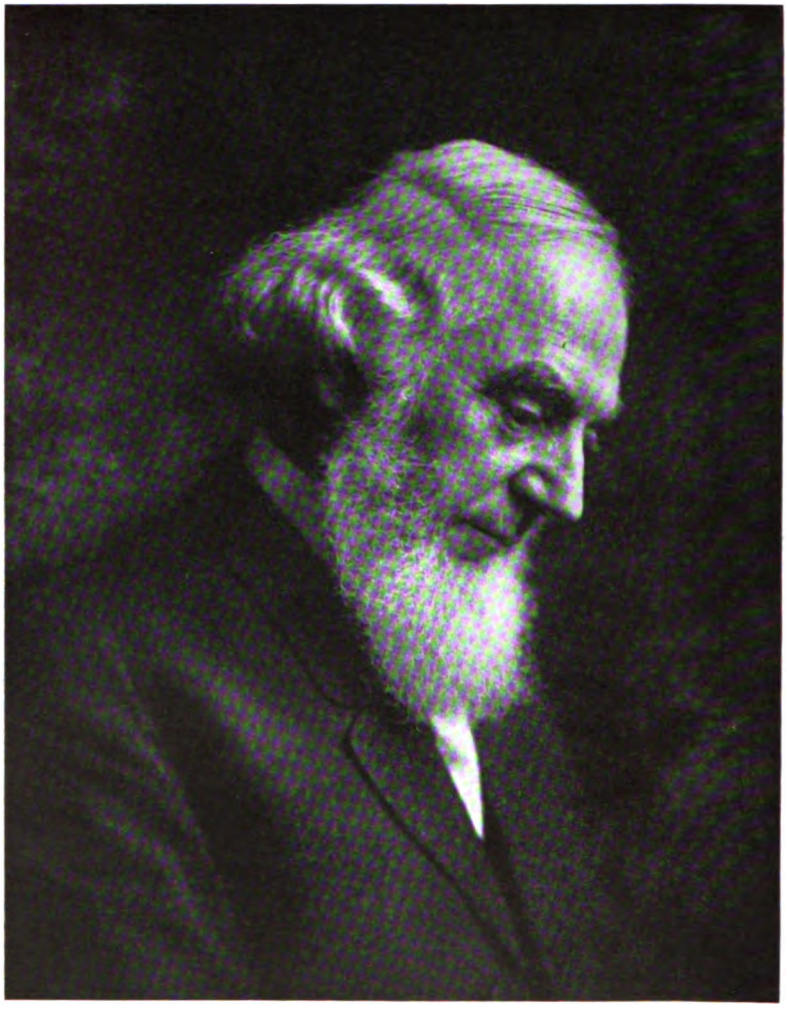
(To be continued)

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By JANE REECE
DAYTON, OHIO

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REFLECTIONS

By FELIX RAYMER

PERHAPS one, if not the chief, of the troubles a photographer experiences in working his light is to overcome extraneous or reflected light. Many times he blames the skylight, claiming it is not set in the building at the right angle, or is too small, too wide, or too long, when as an actual fact the angle, size, length, or breadth of it has nothing to do with his work. Few operators give to their *rooms* as well as their lights the study necessary. Most have the idea that any room will do so long as the light is right, and their lens short focus enough to work in it. But as often as not, the troubles, or a great portion of them, they are experiencing, come from the arrangement of their operating room. There will be a certain amount of reflected light from any room and light. It is an absolute impossibility to control every ray entering the skylight, and a few of them wander off, striking smooth surfaces contained in the room and are then reflected back toward the subject, and to the critical eye show their effect in the face.

The Side Reflector

One of the greatest bones of contention between operators for years has been the old time-honored reflector used on the shadow side of the face to give detail in the deepest parts. Many claim they *never* use reflected light; equally as many claim they *always* use it, and still others claim they use it when it is needed. The latter class are the operators who *know* what they want and *will* succeed in getting it by any means possible. Those who claim they *never* use it, claim as their reason for not doing so, that it destroys modeling. True, it will, unless used right. Few of them realize that the reflector should stand on the shadow side of the face in exactly the same position as the skylight does on the light side. If the subject is placed so that the entire skylight is in front of him, so should the reflector be placed. If it stands at any other angle it gives *false reflections* and hence the destroying of the modeling. Again, where the reflector is used it is too often used too near the subject. It has been my experience that to place the reflector as I have described, and the same *distance* from the subject on the shadow side that the skylight is on the light side, will give ample detail for the deepest shadows. Its effect should not be seen, or at least not be so plainly seen that one can say of the picture, "A reflector was used here."

The Eyes

As a rule reflected light of all descriptions can be noticed in the eyes sooner than anywhere else. The ball of the eyes being a moist surface catches the reflections, and if the operator is a close observer he will see these stray rays. This is especially true where the reflections come from the front. Often a background set at an angle will throw a reflection on the eye, and just here, I will say, whatever affects the eyes will affect other parts of the face too; perhaps not so noticeably, but when the retoucher has his work to do he will notice them. Many a retoucher has twice the amount of work to do on his negatives for the reason the operator was careless or did not know how to control his reflected light as well as his skylight. If the reflector on the shadow side of the face stands too near the subject, a small "speck" of light will appear on the lower edge of the iris of the eye. If the operator will get close to his subject and examine the eye he can see the shape of the reflector in this spot of light. The same is true of the little "catch light" we try to get in the

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eyes; they are a small reflection of the skylight. With this knowledge the operator can readily locate his trouble. If there is a window in front of his subject it should be closed off during the exposure. The reflector should stand away from the subject far enough to prevent the little dart of light appearing on the lower edge of the iris. If it does appear there is extra work for the retoucher to etch it out. Often our subjects wear glasses, and we are bothered with the reflections on them. The first inclination of an operator, unless he knows the secret, is to turn his sitter from the skylight to remove the reflection from the glasses. This is the worst thing possible and really makes it more pronounced. The remedy is to turn the subject toward the skylight, slowly watching the reflection until it disappears. Do not turn him further than necessary, for to do so gives a flat lighting. The reflection on the glasses is caused by the reflector on the shadow side of the face, and the remedy is to turn from it to the skylight as stated or remove the reflector. This last measure is often impossible, due to a loss of detail when done, so I advise the first.

The Room

Frequently the room itself gives many sources of reflected light. The walls may be papered or frescoed in light colors, and if they are it is a foregone conclusion there will be reflections from them. If the walls are of a lighter shade than the shadow side of the face, they certainly will have their effect on that side of the face. Any such reflected light should be avoided, for the operator has no control over it. It comes in from all sides, and with the result it strikes the face from several different directions and sources, and we must bear in mind our instructions in art from all the masters was and is to "use but one source of light" in our lighting of the subject.

The Background

There has been quite a rage for white backgrounds in later years; but notwithstanding this fact there are very few operators who know how to use them and get good results from them. I once heard an old operator and artist say the reason so many operators worked in "low keys" of light was because "high keys" were so much harder to manage. This I believe to be true, and the introduction of a white ground raises the key many degrees. The reason for the low key being easier to control is that there is less light to give reflections and foreign sources of light. One effect seen in the lightings where a white ground has been used is a very fine line of light showing around the outline of the face on the shadow side, which is caused by having the ground placed at too acute an angle facing the light in the endeavor to make it as white as possible. Turn the ground away from the light a trifle and this false light disappears at once.

The Floor

If reflected light comes from the floor, it shows on the iris of the eyes the same as when the reflector is too near the subject, except that it shows on the under edge of the iris. It can be easily seen if the operator will pass his hand backward and forward under the subject's face; as his hand moving will show darker on the iris as it passes over the reflection. In conclusion, I will say I have never known the time when the light falling from the skylight gave trouble, but it is after this light strikes some foreign surface and is reflected back in the form of reflected light that causes the trouble.

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DIGNIFY THE PHOTOGRAPHIC PROFESSION--IT'S WORTH IT

By A. H. BEARDSLEY

NO finer, saner, business-getting advice was ever given than is contained in the now well-known "Code of Ethics" adopted at the Thirty-fifth National Convention at Indianapolis last July. The question now is, how many are getting down to business and using it? Today the practice of photography requires the intelligence, education, and personality of the truly professional man. It is not and should not be a hand-to-mouth livelihood to the man who is master of it. True improvement, reform, and progress must have their beginning in the individual. A glance at ourselves in connection with the sound admonitions of the "Code" should tend to start something to our own good without delay.

The preamble of the "Code of Ethics" reads:

"*My business standards shall have in them a note of sympathy for our common humanity. My business dealings, ambitions, and relations shall always cause me to take into consideration my highest duties as a member of society. In every position in business life; in every responsibility that comes before me, my chief thought shall be to fill that responsibility and discharge that duty so, when I have ended each of them, I shall have lifted the level of human ideals and achievements a little higher than I found them.*"

How many of us can look a man in the eye and say with honest conviction that we are trying to live this much of the "Code?" Really, if we adhered to the preamble alone, we would all be better men in business, society, and at home. Any man who will take to heart the sound practical common sense of the opening sentences of the "Code" will be in a position to assume the dignity and assurance which belong to the professional photographer. We must dignify our business; and, if we believe in it and in ourselves, we can make others respect it.

SECTION 1. *The practice of photography, both as a science and an art, is worthy of the very best thought and endeavor of those who take it up as a vocation.*

SECTION 2. *Having accepted photography as a vocation, the practioner should at all times and in all places consider it beneath his dignity to deny the appellation "photographer," but should, on the contrary, esteem it an honor to be able to say, "I am a professional photographer."*

There is more meat in these two sections than the majority of the photographic fraternity grasp at first reading. We admit it sounds well, give it our approval, and then merrily wend our way. We must do more than this. We must halt and look these sections squarely in the face. Let us apply their meaning to a typical case in actual practice. Perhaps we will then understand why there was ever a cause for incorporating sections one and two in the "Code."

The photographic press is today giving much space to the subject of home portraiture. There is, indeed, a golden opportunity awaiting the man who knows how to handle this part of the photographic business intelligently. However, beware lest you jump into it without realizing that you will need more than a lens, camera, and suitable equipment. Change places for the moment. Suppose *you* are the man that is expecting the photographer to take pictures of your little daughter among her playthings. It is but natural that you idolize your child and that you guard her from all objectionable conditions at home and abroad. Very well. The home portrait photographer arrives. You, the child, and all the family

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naturally inspect him rather critically. The reason for this is the novelty of having pictures of the child taken at home. The photographer's manner is crude, ill at ease, and almost gruff. His clothes are spotted and need pressing badly. He may be the finest home portrait photographer in your town, but could you or would you ever call him a professional man? Moreover, if in addition to his unattractive appearance there is an odor of a "morning bracer" lingering about him, the effect produced upon you and your family is not conducive to respect for the photographic fraternity. Overdrawn, you say? Yes, fortunately, it is in the majority of cases; but remember it may take only one exception like this to put the entire home portraiture business of a town in disrepute. Physicians and lawyers have an *esprit de corps* which places the prestige of their profession ever before them. It is up to the professional photographers to create such respect for their vocation in the public mind that those who follow this pioneer work must uphold this respect or fail.

SECTION 3. *Our brother photographer's name and reputation should be as sacred to us as our own. The off-hand slur; the unnecessary criticism of his work or methods or manners; the meaning smile or shrug of the shoulders, have no place in the daily life of a professional photographer.*

SECTION 4. *The re-photographing of the work of another to achieve a saving of cost for a patron is inconsistent with the best interests of the profession, and it is not in accord with the established rights of our brother photographers.*

SECTION 5. *The cutting of prices in order to get business away from other photographers without any other legitimate excuse is inconsistent with the dignity of our profession and not in accord with the rights of every man to have a fair and open chance to do business.*

These three sections were written because some of the photographic fraternity needed them for immediate digestion. Either this "Code of Ethics" of ours is a "scrap of paper" or it is not. We can never dignify the photographic profession and make it a vocation of which we can all be proud until we work all for one and one for all. This great country of ours owes its reputation, wealth, and strength to the principle of unity. Let us strive to make the vocation of the professional photographer respected and valued through consistent application of this great principle. It can be done. Those who doubt, scoff, or belittle the earnestness of purpose back of our "code," deserve no place or consideration among us as professional photographers. Every worthy project that was ever launched has been laughed at and doomed to failure. If our purpose is sound, which it most certainly is, it will thrive on the very enemies it makes. "Every knock is a boost," is more than an idle phrase. However, remember that no success is won by simply sitting back and allowing the "other fellow" to do all the work. If we all sit back there are no "other fellows" left to even start things. Forget that there is another professional photographer in your town. Act as if the whole reputation and success of professional photography in the entire country rested upon you alone. If you work honestly on this basis you will need no prodding or reminding to make something of yourself and your profession.

SECTION 6. *Advertising in its many forms is essential in these days of commercialism; but the claiming of false or ungained honors, untrue statements of any nature, boastfulness of work better done than others can do, depreciation of the work of other studios, is unworthy of the professional photographer, and its consistent repetition should be severely and publicly condemned.*

It is high time that the photographic fraternity realized once and for all that the photographic press of this country is doing its utmost to uplift the *morale* of the entire photographic field. By means of careful investigation our press is trying to establish the integrity and reliability of each firm and individual who wishes to advertise. This is done *before*, not after, the advertisement appears. Any firm of repute, or individual who is "on the level," welcomes an investigation

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which will stamp both name and product with the hall-mark "sterling" of the photographic industry. For the professional photographer who knows his business there is no quicker or surer method of attaining permanent success than through conservative and consistent advertising in the photographic press. To be represented by a neat, appropriate advertisement stamps you at once as being a permanent, efficient part of the photographic business of the country. Responsibility and stability are always consciously or unconsciously associated with firms and individuals who advertise regularly and have produced the goods to back it up.

SECTION 7. *The best interests of the patron should at all times be the first thought of the professional photographer. A studio based on service to the patron, and demanding fair pay for real service, is following the best tenets and precedents of the profession.*

Any man, of any profession, who has worked hard to master his business, and who serves the best interests of his patrons, has every right to demand and expect fair remuneration. Value your work honestly. It is just as wrong to overestimate as underestimate the worth of what you do or sell. The public are not slow to place the correct valuation on your product. For this reason, if for no other, be honest about your prices. Physicians and lawyers have a scale of charges which meet their requirements according to the reputation, special field, and residing town of each practitioner. A trained specialist in any profession commands remuneration in keeping with his experience, knowledge, and success. Why cannot the professional photographers work out a similar schedule? They can.

SECTION 8. *It is a privilege to give aid and advice to those whose knowledge is less then our own and who come seeking our help, so that they may progress in the practice of photography. We learn most by giving to others of our knowledge. By refusing to give of the gifts that have been vouchsafed to us we impede the progress of the art.*

There are many men who believe that they will jeopardize their business by giving information and help to a competitor. These men firmly believe that the competitor will immediately monopolize the entire business of the town. No man or company need fear the results of true service to a competitor. There are always exceptions, but in the great majority of cases a man who helps his competitor by word or deed is put down in the archives of the business as being "white." Such an appellation is without price; you may win it, but buy it,—never.

SECTION 9. *True service to our patrons is founded on giving them what they desire at a price which will leave a fair profit to ourselves. This is not possible without a knowledge of what it costs to do business; therefore we cannot reasonably be giving true service unless we know what it costs us to sell, and unless we sell at a price which will give us a return proportionate to our skill and to our expense, so that both our reputation as photographers and our credit as business men may be maintained.*

"Art for art's sake" is not dead, nor need it die. However, in justice to ourselves, and to the times in which we live, we must be business-like about its production. No longer, among intelligent people, do we find the so-called "artistic temperament" a sufficient excuse for looking unkempt, wearing old clothes, needing a haircut, and sporting one of those Little Lord Fauntleroy fluffy bow ties. Such dress is not, and cannot be, associated with a professional man who is alive to the demands of today. If the photographers of this country wish to win the respect of the public and be ranked among professional practitioners they must present a clean-cut, business-like appearance. Moreover, the so-called "artistic temperament" positively is not, and cannot be, sufficient excuse for waiving financial obligations. It is high time that we develop a professional photographer who can produce work of the highest artistic merit and yet look and conduct himself like a professional business man. It has never been satisfactorily proven that an unkempt appearance helps to produce better pictures

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than neatness and cleanliness. Until it has been conclusively proven that art and untidiness must go hand-in-hand to produce works of merit, let us clean up, stand up, and be men of the business world.

Cultivate the alertness of the lawyer, the quiet assurance of the physician, the sympathy of the artist, and the financial responsibility of the business man. Then study, experiment, and practise the science of photography in any or all of its branches; re-read the "Code of Ethics" slowly and carefully; take a new grip on yourself; then *be* a *real* professional photographer *now*.

TALKING MOTION PICTURES AND SELENIUM

By SAMUEL WEIN

IN the present-day talking motion picture systems, use is made of simultaneously recording and reproducing animated objects and sounds, by means of combining the motion-picture machine and the phonograph. The success attained thereby is of very little practical importance, owing to the difficulty of ensuring perfect synchronism. Another method recently patented was to record the sound waves from the needle of the phonographic "sound box" on the same film with the motion pictures. The success attained in this method is of no value at all, on account of the fact that duplicates are impossible to make, and not only that, but in order to reproduce the sounds therefrom, the film must be a little thicker than it is, otherwise the sounds will not be reproduced successfully.

It is essential to the correct reproduction of the movements of the persons or objects in combination with the sound waves that the simultaneous movements and sounds should be recorded and reproduced simultaneously in exact synchronism, and that the sound waves which constitute the sounds should not suffer any variation in the process of recording and reproduction, but should be recorded and reproduced without the introduction or accompaniment of any other sound waves.

It is obvious, therefore, that no true record or reproduction of the sound waves could be made by any mechanical process or means in which a hard substance necessary to make the impression comes in contact with another hard substance, such for instance as the recording or reproducing pin of the phonograph, because the friction caused between the two hard substances itself creates vibration or sound waves which accompany, vary, or modify the sound waves which it is desired to record and reproduce. These are recorded and reproduced with the latter, proving detrimental to their true acoustic reproduction. The record, therefore, must be taken or produced without any contact between the medium caused to vibrate by the sound waves and the record or recording substance. It is further obvious that if the impressions of the movements and sounds were recorded separately on separate records, the movements and sounds would be liable to vary in point of time and fail to synchronize with each other.

Another disadvantage of the present-day talking motion picture machines or systems is that if the operator either neglectfully or wilfully tears or cuts out a piece of the film which constitutes the movements or actions, the result would be that a certain amount of action or movement is missing, but the equivalent in sounds would still be in the phonographic record, thus showing the device would soon be put out of synchronism at this point.

In order to avoid this and to insure correct synchronism the late Dr. Ernest

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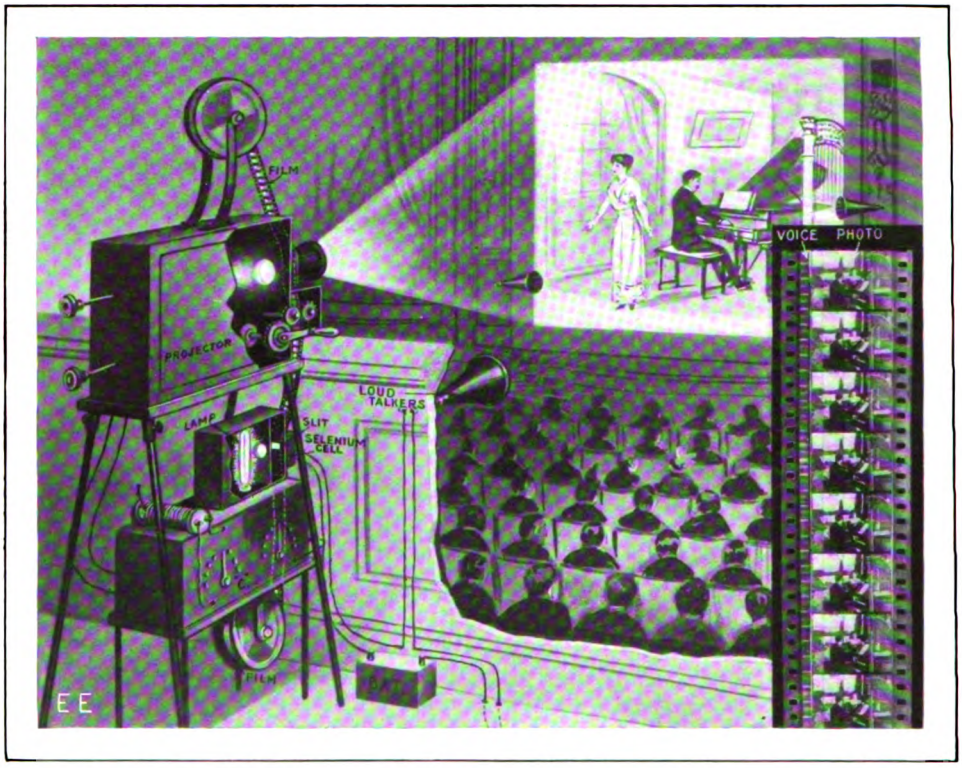


FIG. 2.—HOW THE VOICE AND PICTURE, PHOTOGRAPHED ON THE SAME FILM, ARE PROJECTED IN THE THEATRE. AT RIGHT: STRIP OF DOUBLE-RECORD FILM.

Ruhmer, of Germany (see *Scientific American*, July 20, 1901), already in 1901, in his experiments with the "photographone," was the first to suggest that the "movements and sounds must be recorded (photographically) simultaneously, on the same photographic film."

For the purpose of collecting or receiving the sound waves, a sensitive telephone transmitter is employed to transmit the sound waves electrically (in the usual manner) from the place where the sounds originate to the motion picture camera; which has a source of light so arranged that it will vary in degrees as to area, quantity, intensity and corresponding effect of light and shade, proportioned to their period and amplitude, simultaneously with the recording photographically of the successive movements of the objects on the same film, as outlined in Fig. 1. Fig. 2 shows voice waves thus photographed on the strip of film alongside of the picture space.

When such a film record is obtained, it is reproduced by causing light to pass through that portion of the film containing the picture record of the successive movements, and so project them on to a screen, and also simultaneously cause light to pass through that portion of the film containing the photographic sound record, and thence onto a selenium cell which is connected in series with a battery and a loud-speaking telephone receiver.

In the diagram of this whole arrangement (Fig. 1), the film unwinds down through the lens barrel and intermittent feed mechanism *5*, *6*, *7*, idlers *3*, *4*, *8*, etc., and also through the sound registering parts *11*, *12*, *13*, etc. When the moving subject is photographed before the lens 7, the accompanying sounds, as voices, music, etc., are picked up by a battery of microphones, "*T*," and

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transmitted electrically over the circuit to a lamp circuit, *11*. This lamp is a straight filament "Radox" or "Line-o-lite" bulb, subject to voice control by the microphone "*T*" variations in resistance; *R* is a resistance, *I* an inductance, and *C* a choke coil.

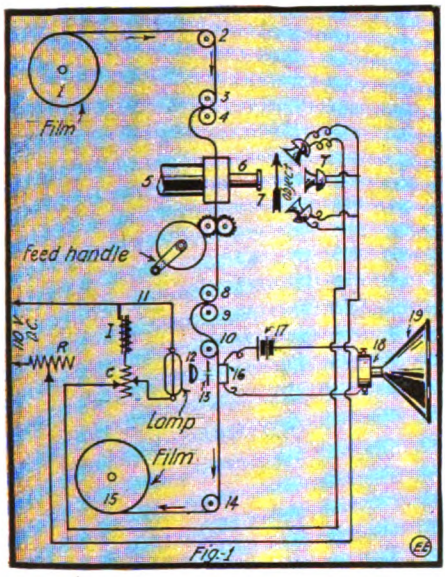


FIG. 1—SCHEMATIC LAYOUT OF TALKING PICTURE ARRANGEMENT

Every changing sound causes the microphones *T* to affect the brilliance of the "Radox" lamp. These light variations, representing the voice, are photographed through a small slit in a screen, *13*, on to the moving film. The film must pass steadily by this slit and not with an intermittent motion, suitable propelling devices being used, of course.

After the sound is recorded the film is developed, fixed, and a print is made in the usual manner. It is then placed in a projecting machine with a selenium cell placed as shown at *16*, connected in series with a source of current, *17*, and a loud-speaking telephone receiver, *18*. The steady light from a lamp is thrown against the film through slit *13*, and the voice wave bands of light and dark tones cause varying degrees of light to reach the selenium cell *16*. Hence the cell has a constantly changing resistance, which is electrically communicated to the loud talkers *18*, placed around the theatre.

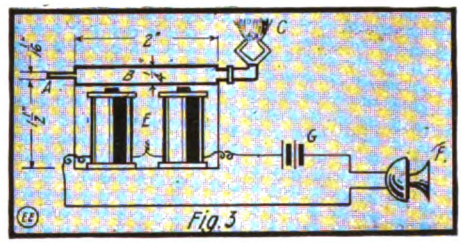
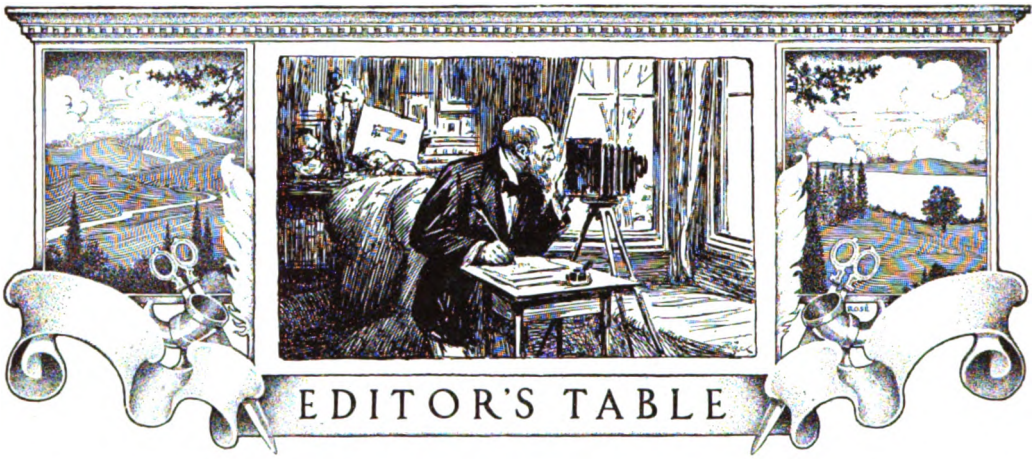


FIG 3—SHOWING HOW THE VOICE CAN CONTROL GAS FLAME

This loud-speaking telephone receiver is built on a new principle employing compressed air.

The usual method of recording photographically the voice on a moving film or plate is by means of manometric capsule flame. This is arranged as in Fig. 3, where an acetylene gas column in chamber *B* is caused to vibrate by the varying electric current passing through the magnet coils *E*, controlled by the microphone *F* and battery *G*. This system has considerable promise for the future and opens up a wonderful field for experimenters.—*Electrical Experimenter.*

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THE ADVANTAGES OF THE OLD YEAR

NO one who wears the stains of photography upon his fingers—no one who gives evidence of any artistic feeling in his photographic productions—need feel ashamed of the progress made by our art during the past year. True, it has been a year of no great prosperity so far as "business" goes; but it has been a great pictorial year and one in which enthusiasm has not lagged. The war has stimulated, in a measure, the photographic industry, but the general condition is somewhat demoralizing, owing largely to the extremely high prices for materials manufactured abroad and for photographic chemicals. But in spite of all photography continues to etch its way into new fields of usefulness and to make deeper its influence in well-known directions. More and more it becomes the right-hand helper of everything.

A wonderful stimulus given to portrait work by the exhibitions at the many conventions held during the year created a demand for additional opportunities of studying the work of the leaders in the profession. Photographers keenly appreciate the value of the pictorial lessons gained from the actual photographic work of those who have made a name in the world.

To meet this demand we have published regularly in the JOURNAL examples of the recent work of the most prominent masters. This will continue to be a feature of the magazine.

A remarkable development has taken place in the motion-picture field, and cinematography is becoming popularized in a most practical and profitable way for the photographer.

A branch of photography which well deserves more attention from both amateurs and professionals is the taking of portraits at home. The work offers some careful preparation and judgment, but is counterbalanced by peculiar advantages, among the chief being the more natural environment of the subject and the chances it affords the photographer to free himself of the skylight traditions, which so often render his studio work excessively photographic.

The National Association, although strengthened during the past year, must inevitably be found too unwieldy for so large a country as ours, unless there is stronger and more general coöperation, and this can be accomplished through the further consolidation of the State and local associations. The application of the "Code of Ethics" will do much to raise the standard of the profession—we would call our readers' attention to Mr. Beardsley's excellent paper on this subject in the present number.

Among the hopeful signs of the year must be included the increased attention given to right business methods

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by professional photographers everywhere. The day of the slouch in business is ended, and in place of the careless, thoughtless, and indifferent appearing photographers of the past a new order is springing up of enterprising, business-like men, careful alike as to the appearance of the place of business and themselves. The photographer realizes that something more is needed than good photography, or even artistic photography, to make a man successful, and with many the conclusion is that this something is progressive business methods.

There has been much grumbling about hard times during the year, due doubtless to the disturbed business conditions which have prevailed everywhere. This state of affairs can be remedied by a right application.

Push in the right direction. There is no other remedy for hard times; nor need for any other, save that perseverance should be mixed with it. Those who are busy, too busy to complain, are those who are pushing most energetically and most wisely. They do not make much noise in their progress, but it is full of quiet energy, and business flows their way. They are doing good work—better work than they did last year; they let the public know about it in a persuasive way, and prices tend upward as the volume of business increases. The first requisite for a growing business is good work—work that will draw big orders, that will stand a good price, that will bring new customers. Then it should be made known, brought before the people who are supposed to need it, put where they can be attracted by it. This simply means advertising in every way that commends itself according to local conditions. Look to the place of business, make it attractive; have a special room devoted to display, and throw it open to the public; throw out feelers for business, and do not be afraid to seek it; put your energies into the getting of patronage, and so handle your trade that you get out of it all it should yield. Keep the duplicate order business always active by the aid of a reception-room assistant who knows how to work it for profit; see to the proper treatment of your patrons in the studio, that they receive all the care and courtesy you can command. Watch the finishing of the work, so that every picture leaving your hands shall be a business persuader. Introduce sufficient novelties to keep the public interested.

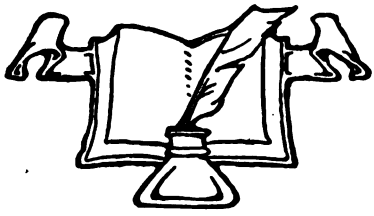
Once more in these United States we find ourselves emerging from a period of business depression which has lasted about five years. We have crossed over to the upper side of the line of estimated normal progression, and all signs point toward vastly increased activity in all lines.

The new year opens brighter. Let us profit by the advantages of the old.

THE JOURNAL wishes you success in every venture that is wise.

It hopes that you may work hard when you work, and play hard when you play; that your play will keep you in condition for your work; and that your work will show pleasure and profit.

THE JOURNAL wishes you more good things than it can express, feeling confident that if you get the things it would have you get, you will have enough, and that in twelve months you will enter into a new year feeling that the past twelve months have add d to your knowledge, your health, your happiness, and your prosperity.



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LEAVES FROM MY NOTE BOOK

By an Old Hand

COPYING

FREQUENTLY one is asked to copy a photograph, and if this is a black print there is no particular difficulty. It is a different matter, however, when the print has been toned sepia or some other color.

The one point to observe is to eliminate the grain of the paper, which is very obtrusive sometimes. This can always be done by absolutely flat, full lighting and a generous exposure. On the other hand some papers, particularly glossy ones, when they have been bent or rolled up, are really difficult to manipulate so that they will not show reflections. The only really satisfactory method is to soak the print thoroughly in water and squeegee it down to an old, clean, negative glass. It is then easy to arrange the lighting so that no reflected light reaches the lens. It may be as well to mention that the longer the focus of the lens the less the chance of reflections. The easiest plan is to place a large dark cloth just behind the camera so as to shut off direct light. Personally I use a small, portable, dark background, so that the only light that reaches the print comes from the sides.

Sepia prints are much more difficult to deal with, as there is very great danger that the shadows in the negative may be too clear. For this reason I prefer to use a medium iso- or orthochromatic plate for such prints, and with a generous exposure and rather shortened development the negatives will show full details in the shadows without the highlights being blocked.

It is a mistake to use process or photomechanical plates for copying prints, as in every case one wants to show as much half-tone as possible.

When one has a violet-toned, printed-out, silver print to deal with, it is very easy to strike trouble, and worse still is an old and faded albumen print, for these are generally faded in spots and patches. The silver print is very apt to give a very flat negative, but this may be avoided by using a medium orthochromatic plate with a ray filter on the lens. This will make the print appear much blacker and a good negative can be secured every time.

For faded prints the only thing to do is to make a special ray filter, and, as the image is more or less of a distinctly yellow tint, it is obvious that the filter must be of such a color that it will make this appear black. We must therefore use a violet filter, which will absorb the yellow. Such a filter may be easily made by fixing out an unexposed plate, well washing and drying, and then staining up by soaking in a half per cent. solution of methyl violet for about fifteen minutes and rinsing and drying. For those who like to buy such a filter a Wratten and Wainwright M series filter D is just the correct tint, and this can be obtained from the Eastman Kodak Company in the form of a gelatin sheet at a very low price. Placed in front of the lens in the usual way this absorbs the yellow, and if a slow process plate be used an excellent negative will be obtained that shows no trace of the fading. Naturally the filter will increase the exposure and this depends on the depth of tint of the filter. Roughly speaking the increase will be about eight times normal.

If the print is cracked it is as well to soak it in water and squeegee down to glass, then the cracks are not so apparent and a little retouching will square matters.

I had recently a job of copying some pencil sketches, which are not so easy to make a good black and white negative of; but the old-time trick of placing a sheet of fine ground glass in front of the sketch will enable one to obtain a decent negative on a process plate.

In the copying of pictures there is only one plate that should be used, and that is the panchromatic, but this necessitates the use of a ray filter, which should be of quite a dark tint; the ordinary ray filter as used for ortho plates, as a rule, being much too light. The so-called correct luminosity, or K3, filter of Wratten & Wainwright is the best. But to really tackle picture copying one wants three or more filters, as frequently it is necessary to emphasize one color over another; for instance there may be a patch of red and one of green side by side, and if they are of the same luminosity the yellow filter would produce them of the same tint or half-tone, whereas they should be differentiated. In such a case it is necessary to use a more orange filter, so as to cut down the green slightly and make it darker than the red. Unfortunately it is not possible to tell anyone exactly what to do in the copying of pictures, for every artist has his own ideas of how his pictures should look in black and white. Some want to see every brush-mark and others want these eliminated.

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ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

The Metol-silver Intensifier

Lueppo-Cramer states that the following modification of the metol-silver intensifier, so often used for collodion negatives, is quite suitable for gelatin plates:

Metol	20.0 gm.
Citric acid	40.0 gm.
Gum arabic, 20 per cent. solution	40.0 c.c.
Water to	1000.0 c.c.

To every 50 c.c. of this add 2 c.c. of a 10 per cent. solution of silver nitrate.—*Phot. Ind.*, 1915, p. 660.

Gum Bichromate

Wurm-Reithmayer suggest that the best preservative for a solution of gum arabic is formalin:

Formalin	0.5 to 1.0 c.c.
Water	100.0 c.c.
Gum arabic	60.0 gm.

A solution prepared on this formula has been kept in good condition for three years. For the bichromate he recommends the use of the sodium salt; 200 g. of sodium bichromate should be dissolved in 40 c.c. of boiling water, and the solution made up to a bulk of 150 c.c. The sensitizing mixture is:

Gum solution	150.0 c.c.
Water	150.0 c.c.
Bichromate solution	30.0 c.c.
Pigment	q.s.

This gives very plucky prints and the paper prints rapidly.—*Phot. Rund.*, 1915, p. 205.

The Tanning of Bichromated Gelatin

The Rotophot Company, of Berlin, have taken out a patent for the preliminary hardening of gelatin films as used for pinatype, hydrotype, and similar processes. It appears that if the bichromated gelatin is first hardened, so that it will not dissolve in hot water, it will still absorb dye solutions in those parts where there has been no light action.—*Phot. Rund.*, 1915, p. 214.

Converting Metric Formulæ—A Simplified and Rapid Method

One sees so many metric formulæ nowadays in photographic or scientific journals, and frequently in newspapers, that a really easy and quick method of converting them into British equivalents cannot but prove useful. The rules commonly given for the purpose are not as simple as they might be, and many fight shy of the task or manage to get incorrect results. It is a further defect of existing systems that the converted formula has no visible identity with the original, so that if an error inadvertently creeps in it will not be self-evident.

Take, for example, the metric formula for a bromide developer given at A below. Converting this to grains and minims in a pint of solution by a popular method, that is to say, multiplying the grams by 8.8 and the cubic centimeters by 9.6, the result is as at B. The time taken by a fairly quick arithmetician averages two minutes, while, as will be seen, the new figures bear no resemblance to the original ones:

	A	B
Metol	1 gm.	8 gr.
Hydroquinone	3.5 gm.	30 gr.
Sodium sulphite	37.5 gm.	330 gr.
Sodium carbonate	37.5 gm.	330 gr.
Potassium bromide (10 per cent. solution)	2.5 c.c.	24 min.
Water	1000 c.c.	20 oz.

The last consideration is more important than might be thought, and arises, of course, from the usual desire to convert the metric formula into a solution containing an even pint, or a given number of entire fluid ounces. It is surely much easier to have an odd proportion of water or other solvent if thereby one is enabled to keep all the figures practically in their original state, or to secure such a face correspondence between the old figures and the new that the accuracy of the conversion is obvious at sight, thus dispensing with any need for verification or checking.

With this object in view the writer has devised an extremely simple method, which is undeniably more rapid than any hitherto proposed—in fact, almost instantaneous. To all intents and purposes it keeps the exact proportion of the various ingredients and bears an immediately apparent relation to its metric original, so that checking is unnecessary, while reconversion, should it ever be desired, is equally quick and easy.

The rule is as follows: To convert a formula expressed in grams or cubic centimeters per liter into grains and minims, multiply the grams by ten, or the cubic centimeters by eleven, and dissolve in 23 ounces of water or other solvent.

Converted in this manner, the foregoing formula would read:

Metol	10.0 gr.
Hydroquinone	35.0 gr.
Sodium sulphite	375.00 gr.
Sodium carbonate	375.0 gr.
Potassium bromide (10 per cent. solution)	27.5 min.
Water	23.0 oz.

(The half-minim of bromide may, of course, be ignored.)

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Here, it will be noted, the figures have a definite similarity to those of the original metric formula, so that one is instantly sure that no mistake has been made. The time taken for conversion averages only five seconds. The 23 ounces it may be remarked, is sufficiently near a pint to form a convenient quantity for making up.

The approximation to complete accuracy is very close indeed, the error being less than 1 per cent. For absolute correctness to three places of decimals it would be necessory to multiply the grams by 10.074 and the cubic centimeters by 11.04; so that by using 10 and 11 as the multipliers there is merely a deficiency of 0.735 per cent. in the grains and 0.363 per cent. in the minims, which is quite insignificant in practice.

The following simple memory rhyme may assist many to remember the new rule:

To convert, with the least of pains,
Cubic centimeters to minims, grams to grains,
Multiply grams per liter by ten,
Or cubic centimeters by eleven; then
The solvent's right amount will be
Fluid ounces twenty and three.

To re-convert, one need only to write 1000 c.c. instead of 23 ounces, and divide the grains by ten or the minims by eleven, calling them grams and cubic centimeters respectively.

For the benefit of those not familiar with the metric system it may be helpful to state that a liter = 35.195 fluidounces, or 35 ounces 94 minims, and contains 1,000 c.c. A cubic centimeter, or c.c. = 16.894 minims, while a gram. = 15.432 grams.

To convert a metric formula of 500 c.c. bulk, multiply the grams by ten and the cubic centimeters by eleven, as before, but take only 11.5 ounces of water or other solvent. For a formula of 100 c.c. bulk, take 2.3 ounces of solvent (0.3 ounces is, of course, 144 minims).

When but a small quantity of a 1000 c.c. formula is wanted at a time the original metric figures may be retained, calling cubic centimeters minims and grams grains, and taking 2.3 ounces of solvent. Ten per cent. (one-tenth) should then be added to the minims. The first-mentioned formula converted in this way would read:

Metol	1.0 gr.
Hydroquinone	3.5 gr.
Sodium sulphite	37.5 gr.
Sodium carbonate	37.5 gr.
Potassium bromide (10 per cent. solution)	2.75 min.
Water	2.3 oz

The fractions are given to show the working, but are ignored in practice.—*British Journal of Photography*, 1915, pp. 685.

Vulcanizing with Ultra-violet Light

Goedrich states that if the usual mixture of raw rubber and sulphur is rolled out into thin sheets and exposed to the ultra-violet light of a mercury vapor lamp that it is as readily vulcanized as by heat in the ordinary way. In twenty minutes the rubber combines with 0.54 per cent. of sulphur; in forty minutes with 1.04 per cent.; and in sixty minutes with 1.6 per cent. —*Phot. Korr.*, 1915, p. 202.

Lippmann Plates

R. E. Liesegang states that the best method for the making of these plates by the bathing process is to coat the glass with a 6 per cent. solution of gelatin, containing 3 per cent. of potassium bromide, and as soon as the film has set to immerse in a 5 per cent. solution of silver nitrate. A very fine grain emulsion is thus formed, which gives excellent results. The special points to be observed are that there should be excess of silver nitrate and that the plate should not be dried before immersion in the latter solution. Naturally these plates must be physically and not chemically developed and an acid solution of pyro is preferable.—*Phot. Rund.*, 1915, p. 198.

The Action of Light on Paper

R. E. Liesegang points out that not only wood-pulp paper, but also pure photographic raw paper, is affected by light. This is due to the resin sizing absorbing atmospheric oxygen and the consequent emission of ozone. If a sheet of paper is partly covered with an opaque card and exposed for an hour to sunlight and then treated with a freshly-prepared solution of pyro-soda, the exposed part will turn a deep brown.—*Phot. Korr.*, 1915, p. 173.

It is with regret that we have to announce the death of two prominent workers in England:

Mr. Vero C. Driffield died on November 14 in his sixty-eighth year. With the late Dr. Hurter, in 1876, he began, the photochemical investigations which resulted in the famous series of papers on the determination of plate speeds, the first of which appeared in 1890. Although the Hurter and Driffield, or, as it is familiarly called, the H. and D., system has been frequently and bitterly assailed, its fundamental facts have been conclusively proved to be sound. Practically to this system are we now indebted for the fast emulsions of the present day.

Prof. Raphael Meldola died on November 16, aged sixty-six years. Although of late years his activities had been mainly confined to the chemistry of the aniline dyes, he had not lost interest in the chemistry of photography, a subject on which he published a readable textbook in 1891.

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The Federal Photographic Society of Washington, D. C.

Officers of the Society are: Prof. T. W. Smillie, Smithsonian Institute, honorary president; Dr. L. H. Beeson, agricultural department, president; H. T. Cowling, interior department, vice president; A. A. Ruark, agricultural department, treasurer; E. L. Crandall, agricultural department, corresponding secretary; F. B. Kaye, navy department, secretary.

The meetings of the Society are on the second Friday of each month, and are held in the New Museum of the Smithsonian Institute, use of auditorium and rooms granted by the Smithsonian on account of the Society being one designed to spread scientific knowledge.

Dues of the Society are $5 yearly. So far there have been two public lectures given, one a couple of weeks ago, by Mr. Amstedts, the inventor of a telophoto process, and an exhibition of the Hess-Ives color process, and a lecture by Dr. C. E. Kenneth Mees, on November 12, on the "Fundamentals of Photography." It is the intention of the Society to admit the public to all lectures given.

Death of W. A. Taprell

W. A. Taprell died Sunday, November 14, at his home in Oak Park, Chicago. He was a partner in the firm of Taprell, Loomis & Co., manufacturers of photographic cards and novelties. He was born forty-eight years ago in Bath, Somersetshire, England, and lived in Chicago for the past twenty-eight years. Mr. Taprell was a man of charming personality, and his friends in the photographic profession, who are legion, will greatly feel his loss.

Amalgamation of the Middle Atlantic States

Ryland W. Phillips and George W. Harris, the commissioners on amalgamation from the Pennsylvania Society, and U. Grant Channel and John F. Sherman, commissioners from the New Jersey Association, met in Washington, D. C., October 15 and 16, to form the Photographers' Association of the Middle Atlantic States. West Virginia was represented by Ryland W. Phillips, who bore the proxy of A. T. Proctor.

Constitutions and by-laws were adopted. Washington was named as the first meeting place of the newly-formed association and the following officers were elected:

President, Will H. Towles, Washington, D. C.; vice-president, A. T. Proctor, Huntington, W. Va.; treasurer, W. I. Goldman, Reading, Pa.; secretary, John F. Sherman, Newark, N. J.

The following vice-presidents from the several States were elected to serve on the board of directors:

Delaware, J. R. Cummings, Wilmington; District of Columbia, George W. Harris, Washington; Maryland, Wm. Kingling, Baltimore; New Jersey, W. J. Baldwin, Somerville; Pennsylvania, J. B. Schriever, Scranton; West Virginia, Miss Josephine McAvoy, Buchannon.

The above-named States are to form the new association and the first convention will be held the latter part of March, 1916, in Washington, D. C.

Photographers of Galveston Organize

Professional photographers and dealers in photographic supplies of Galveston, Texas, have formed an organization through which, by means of coöperative efforts, they expect to increase interest in amateur and professional photography in South Texas. The organization bears the name of "The Professional Photographers' Association of Galveston."

Officers were selected as follows: Paul Naschke, president; C. B. Smith, first vice-president; V. E. Gregg, second vice-president; N. V. Clark, secretary; Paul Berkin, treasurer; H. H. Morris, C. B. Smith, and Joseph Maurer, members advertising committee. It is regarded as a coincidence that three of the leading members of the Galveston association are former presidents of the Texas State Photographers' Association. These are H. H. Morris, Paul Naschke, and Joseph Maurer.

It is planned to hold one business meeting and one social meeting each month. The wives and daughters of the members will be invited to the social meetings, and it is planned to

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make the Association a kind of social club in this respect. Quarters will be fitted up, and these monthly meetings will be made especially attractive.

The business meetings will be made mutually helpful to the photographers, and questions and problems of photography will be discussed. Round-table discussions will be made a feature of each meeting, and it is believed that in this exchange of ideas the Association can be made of great benefit to the members.

It is also planned to conduct an extensive coöperative advertising campaign, using the Galveston newspapers. Discussing this part of the Association's work, H. H. Morris, chairman of the advertising committee, said: "We expect to conduct a campaign in the Galveston newspapers that will be of value to the members of the profession here. It will be general in character, benefiting each individual member. By this plan we hope to induce those who desire to have pictures taken for Christmas to have it done early, thus eliminating the holiday rush. The campaign will also be conducted in such a manner as to let Galveston people know what the Galveston photographers can do."

Legislation designed to protect resident photographers in Galveston against transient dealers is desired, and the Association will work for the enactment of a city ordinance to this end. It is also desired that a State law be enacted limiting the operations of these transient dealers, and the Galveston association will become affiliated with the State organization and will work for the passage of a bill such as is wanted by the Texas photographers.

The Springfield Photographic Society Exhibit

The Springfield Photographic Society, Springfield, Mass., which was organized in April, 1915, held its first annual exhibition in the wareroom of the L. M. Pierce Piano Co., during the entire week beginning November 15. Four hundred exhibits were shown covering a large variety of subjects and ranging in size from very small miniature pictures to 11 x 14 enlargements.

Practically every kind of photography was shown, from pictures in what colors are available to photography, to misty landscapes that resemble reproductions of the work of landscape painters. The majority of the photographs were landscapes, but there were some good "action" pictures and many of groups and individuals.

Ribbons of merit for the pictures on exhibition were awarded as follows:

Straight photography, landscapes: First, W. E. Brown, No. 1, "Mt. Greylock;" second, F. A. Hoschke, No. 27, "Morning on the Hill;" third, J. Connors, No. 2, "Spofford Lake, New Hampshire."

Pictorial photography: First, F. A. Hoschke, No. 14, "Sugar Maples;" second, Dr. A. J. Treichler, No. 3, "Scene in Forest Park;" third, A. H. Bemis, No. 21, "Ruins in Summer."

Snowscapes: First, Wildman, No. 1, "Winter;" second, W. E. Brown, No. 2, "Winter Road."

Animal life: First, Mrs. K. A. Burdette, No. 6, "That's My Bird;" second, A. H. Bemis, No. 8, "Deer, Forest Park;" third, Dr. A. J. Treichler, No. 7, "King Leo."

Architecture or interiors: First, A. B. Horne, No. 12, "Spanish Mission;" second, F. A. Hoschke, No. 15, "New London Light;" third, Dr. A. J. Treichler, No. 50, "An Old Landmark, Litter River."

Portraits: First, Dr. A. J. Treichler, No. 42, "Brother Humes;" second, W. C. Hart, No. 20, "Stories;" third, A. C. Bennett, No. 27, "The Story Hour."

Flowers and Still Life: First, W. C. Hart, No. 16, "The Rhododendron Clump;" second, A. C. Bennett, No. 9, "Old Pewter;" third, Dr. A. J. Treichler, No. 31, "White Hardhack."

Waterscapes: First, B. B. Snowden, No. 9, "Hard-a-Lee;" second, A. H. Bemis, No. 16, "Outward Bound;" third, W. S. Reed, No. 5, "Thunder Hole."

Figures: First, J. Connors, No. 5, "Atlantas against Springfield;" second, B. B. Snowder, No. 2, "Between Friends;" third, Dr. A. J. Treichler, No. 47, "The Chess Game."

Honorable mention: Dr. I. R. Calkins, J. B. Horne, A. H. Bemis, B. E. Geckler, William A. Quigley, Mrs. M. Louise Bemis, Ernest M. Lyman, William C. Hart, P. M. Tainter, Miss Leona M. Peirce, P. Emerson, Arthur P. Irving, Edward C. Lewis.

Awards to Bausch & Lomb at Panama–Pacific Exposition

Bausch & Lomb-Zeiss photographic lenses were awarded the gold medal at the Panama-Pacific Exposition, which was the highest award given. It is generally understood that no grand prize was awarded on account of the war in Europe, which prevented all foreign exhibitors from entering and thereby reduced competition.

A grand prize was awarded the Balopticon. The photomicrographic apparatus, of Bausch & Lomb make, has been granted the Medal of Honor. This apparatus consists of a special camera with appliances for using it in connection with a microscope to make photographs of specimens as seen in the microscope.

The "Wellcome" Photographic Exposure Record and Diary, 1916

Whether pressed into the service of Mars on the battlefields of Europe, or limning the picturesque landscapes of happier lands, photography continues both to serve and to fascinate, and this little volume stands preëminent as a useful guide to the art in its varied phases. It maintains and has extended its reputation as a concise encyclopedia of photographic information, ranging from simple routine operations to the developments of the higher photography.

A rich harvest of extensive experience and expert skill is stored in this wonderful little volume. It forms and advises on everything—on photography by night and the correct quantities of flashlight powder; on green, or sepia or blue toning of bromides, or warm tones on gaslight papers; on time and factorial developments, the intensification of color plates, exposures for

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interiors, the speeds of bromide papers, the staining of prints, etc. Not one of the varied aspects of the art appears untouched, and besides all this there are instructive tables, simple formulæ, and a multitude of useful tints. If, however, we were to be asked to state the outstanding feature of the book, we should say that it makes the practice of photography exceedingly simple; it banishes difficulties and ensures success even to the beginner.

Of especial value is the "Wellcome" Exposure Calculator, an ingenious rotary device, fixed to the back cover, which, by one turn of one scale, indicates the correct exposure of any plate or film at any time of day or year. For British, Colonial, American, and Continental plates and films independent exposure factors are given.

The illustrations have always been a feature of this publication; not only because they are the work of leading experts, but because they are reproduced with great skill and taste.

This year there are included examples of the work of two leading American photographers, Merl La Voy and Robert G. Weyh, Jr.

That experts who produce such work endorse the recommendations contained in the "*Wellcome*" *Photographic Exposure Record and Diary*, is sufficient alone to make every photographer feel that it is an essential part of his equipment.

Specially ruled pages for recording particulars of exposures, diary pages for the year and pages for memoranda are other features of this little volume, which is issued in wallet form with pencil complete.

Of the "*Wellcome*" *Photographic Exposure Record and Diary* three editions are published—for the United States of America, the Northern Hemisphere, and for the Southern Hemisphere.

The "*Wellcome*" *Exposure Record and Diary* can be obtained from all photographic dealers and booksellers. Price in the United States, 50 cents.

Second Annual Exposition of Photographic Arts

At the Second Annual Exposition of Photographic Arts and Industries to be held in Cleveland, week of March 6th, in connection with the Fourth Annual Convention of the Photographic Dealers' Association of America, considerable attention will be paid to the exhibition of representative photographs in the photographic competition to be held under the auspices of the Photographic Dealers' Association of America.

The fact that this Exposition will be attended by at least 150,000 persons, in addition to the delegates to the convention of the Photographic Dealers' Association of America and numerous manufacturers and industrial representatives, gives an unusual and interesting aspect to this feature of the Exposition.

The prints for this contest will be suitably arranged and hung by a committee of men who have had experience in the display of photographs and every effort will be made to present the merits of the pictures to the best advantage.

Cash prizes, accompanied by a diploma, will be awarded to meritorious exhibits in each class. Diplomas of merit will also be given to all prints rated above 75. The awards will be made by a jury composed of three well-known amateur and professional photographers.

The professional class will be open to professionals only. This class will be confined to professional portraiture and limited to five pictures from each entrant.

The amateur class is open to amateurs only, and will comprise amateur prints of every description, limited to five prints from each entrant.

The following cash prizes will be made in the professional class: $50.00 cash, first prize; $25.00 cash, second prize; five $5.00 cash prizes for the next five best prints. Each of these awards to be accompanied by a diploma. All other prints of merit will receive a diploma of honorable mention.

The following cash prizes will be made for the amateur class: $50.00 cash, first prize; $25.00 cash, second prize; five $5.00 cash prizes for the next five best prints. Each of these awards to be accompanied by a diploma. All other prints of merit will receive a diploma of honorable mention.

To avoid needless repetition and to keep the exhibition upon the high plane desired only such prints will be shown as have passed a competent examining board composed of prominent artists and photographers.

The exposition management believes that the opportunity afforded photographers to display their work under the reasonable rules formulated for this competition to such a large number of interested people will induce a liberal representation in all its branches. Prospective exhibitors are urged to send for entry blanks without delay, so that preparations can be made for the proper display of their pictures. Address all inquiries to the Print Committee, International Exposition of Photographic Arts and Industries, 241 Engineer's Building, Cleveland, Ohio.

Newark Museum Association Exhibit

An exhibition of color photography, together with work in monochrome by well-known American artists, was held in the Free Public Library of Newark by the Newark Museum Association and remained open until December 6.

The exhibition comprised about eighty autochromes by Helen M. Murdoch, Clara E. Sipprell, Paul Anderson, Allison and Hadaway, Karl Strauss, and others. Interesting plates of the San Deigo Exposition and portraits of well-known people were shown.

Mr. E. R. Dickson, editor of *Platinum Print*, sent sixteen artistic platinum prints, and Clara E. Sipprell and Alice Boughton were showing interesting portraits.

The Hess-Ives Corporation and the Lumiere-Jougla Co. were represented by process exhibits.

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CORRESPONDENCE

Correspondents should never write on both sides of the paper ☛ No notice is taken of communications unless the names & addresses of the writers are given ☛ ☛
We do not undertake responsibility for the opinions expressed by our correspondents

EDITOR OF THE PHOTOGRAPHIC JOURNAL OF AMERICA:

THERE seems to be an impression in the mind of some people, due to a persistent rumor, which apparently has sprung from nowhere, that the Ica Company has either gone out of business or is soon to go out of business. We have never heretofore taken notice of this rumor (except in one instance where we had the pleasure of damming up one source of such misinformation). The latest rumor is to the effect that there is at this time a representative of Messrs. Ica in this country who is about to wind up the affairs of the International Photo Sales Corporation.

As we consider this rumor very derogatory to our interests, and as it is possible many of your readers are under the impression that they will no longer be able to obtain our goods, we are asking you not alone as a matter of courtesy, but as a matter of justice, to print in the columns of your valued magazine this very emphatic denial of any adverse action in regard to this company.

Like most rumors, this particular rumor probably originated through circumstances misunderstood by those not in close touch or sympathy with the affairs of this company. As a matter of fact, the International Photo Sales Corporation has been placed in a better position to offer the products of Messrs. Ica and other importations to this country after the European War than it ever was.

Last May, in anticipation of the urgent need for better facilities with which to meet the the ever-constant and growing demand for Ica cameras and accessories, we moved to larger and more commodious quarters at No. 11 East 40th Street. In addition, we increased our selling force, and it is only a very short time before further changes for the betterment of our business will take place.

To deny that our business has not suffered by the conditions now existing in Europe would be absurd. Every merchant who imports, or uses in his business goods imported from abroad, has suffered to a very material extent, and we offer no apology in this direction for circumstances over which we have no control. We claim, however, and we believe our claim is a just one, that so far as the importation of photographic goods is concerned, we have been very successful, and have received more shipments than most of our competitors, and we have the further assurance from our factory that advantage will be taken of every possible channel through which goods can possibly reach us.

Many of your readers are no doubt under the impression that the fame of Ica cameras is centered in two or three models, such as Icarette models A and B, Ideal, Minimal, etc. This is quite wrong, as Ica efficiency is just as apparent in the entire line of 43 models. We have a stock of cameras which, while admittedly below normal, is worth the consideration of those of your readers who prefer the niceties of adjustment and perfection of mechanical detail which are the hall-marks of Ica quality, and if they will write to us direct we shall at all times hold ourselves willing and in readiness to tell them the proper camera for their particular requirements. Personal service to the consumer is one of our policies, grounded in the foundation of a business which has steadily grown to admirable proportions, and which, by reason of our direct appeal to the consumer, and the quality of the house of Ica in back of us, we expect to see grow evermore in volume, as more people recognize the matchless beauty of the products we import.

It may not be generally known to your readers that we are the importers of a famous English camera, made especially for us, which is sold under the name of the "Ipsco Reflex Camera." We also represent an American motion-picture camera, the "Kinograph," which, for the money, we consider the most practical on the market today. With these various representations, you can readily see that the rumors of the discontinuance of our business activities about which we write you are entirely without foundation. We do not feel that the rumors were sent abroad by anyone with a vicious desire to hurt our standing in the trade, but we do believe that our failure to refute these remarks and to state that they are entirely baseless, and without any foundation in fact or truth, would result in a general misunderstanding of our real status.

In conclusion, it may likewise interest our customers to know that Messrs. Ica are working with almost a normal force of employees in an endeavor to fill all their orders. True, a great deal of this activity is due to the home demand; nevertheless our interests, as you can readily imagine from what we have stated above, are not being overlooked, and your readers will do well to keep in personal touch with us, in order that they may obtain what we are sure they desire at all times, the very best in photography, and the very BEST means "IPSCO."

Very truly yours,
INTERNATIONAL PHOTO SALES CORPORATION,
JOHN L. CURLEY,
Secretary.

November 26, 1915.

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Side-light Studios

There are many traditions which are as hard to kill as the many-headed monster of ancient fable, which grew a new head as quickly as an old one was lopped off. One of these traditions is that it is necessary for a photographic studio to have a glass roof, and for many years much inconvenience and expense has been caused by the endeavor to fulfil what was thought to be an indispensable condition. The only time when this is true is when a group extending right across the studio has to be taken, but even then excellent results may be got with a high side-light. We have seen a group of one hundred and twenty figures taken in a room about fourteen feet high with a wide side-light only, and it was little, if at all, inferior to one taken in the orthodox studio.

One of the greatest drawbacks to the glass-roofed studio is the necessity for placing it at the top of a building, or of making it project from the main body of the structure if situated on a lower floor. If we bear in mind the specification for an ideal studio given by the late H. P. Robinson, who was no mere theorist, but a life-long portrait photographer, we shall see that the top-light studio is not the only workable form. Robinson's dimensions for the studio are: Floor space, 26 to 30 feet square; height of room to ceiling, 14 feet; the north side being glazed from the top to within 4 feet 6 inches of the floor. Nothing can be simpler than this, and nothing cheaper to build and maintain. Leaving the artistic side out of the question, such a studio has many practical advantages. There is absolutely no possibility of leakage and practically none of damage by hail or snow, while it is perfectly easy to keep the glass clean by using an ordinary ladder. One set of blinds only is required, and as these run in a vertical plane there is no trouble from sagging.

Coming to the actual question of lighting, it will be found that considerable modifications in the dimensions given by Robinson can be made. The one all-important point to be considered is the angle at which the light falls upon the model, and by general consent 45° is allowed to be the most useful. To put this into graphic form we may fix a cord to the top of the window sash, and tie the lower end to a screw eye fixed into the floor at a distance equal to the height of the window from the floor. If the model can be placed so that when standing the string crosses his face diagonally the window is high enough to illuminate him properly. He must, of course, be far enough from the window to allow of a proper sized background being used, and also to allow the lower part of the figure to be properly lighted. It is important that the light should not be too narrow, or there will be a lack of front light and undue use will have to be made of the reflector, a proceeding fatal to good work. If an ordinary room is to be converted into a studio and there are two high, narrow windows, the central pier should be removed and the light made continuous. If there is one window in the centre, this should be increased in size to about double its former width. It is very desirable that a side-light studio should be wide in proportion to its length, as it will be found that many good poses may be made by working across the studio, getting the Rembrandt or shadow effects by placing the sitter near the window, and the front or miniature painter's light by making the sitter face the window. It is actually easier to secure characteristic portraits with this light than with the orthodox top and side-lights, for there is less danger of getting a mixed or undecided effect when there is only one set of blinds to be considered. It is, of course, necessary to have two sets of blinds or curtains, one being of light and the other of opaque material, arranging these in two or three tiers as the height of the window may necessitate.

The "single-slant" studio is intermediate, being between that just described and the ridge-roof or lean-to pattern, and where sufficient height cannot be obtained it is well worthy of adoption. In its best form it consists of a room about 14 feet wide and 12 feet high. The large single sash slopes out from the ceiling, making an angle of 62° with the floor, to which it does not quite reach, the lower 4 feet being vertical and solid. This form is well adapted for ground-floor studios, as it is easy to put in a girder to support the superstructure and remove the whole side wall, replacing it by the sloping light. The angle of 62° is chosen because even on the longest day no direct sunlight will strike upon such a window if it has a northern aspect. When one sees what excellent portraits can now be made in rooms lighted only by ordinary windows, it must be conceded that the tradition of the top light is doomed. It is, of course, as good as ever it was, and answers well for all classes of work, but when circumstances preclude its construction there is no need to grieve about it, as the best possible work can be done in either of the studios we have described.—*British Journal of Photography.*

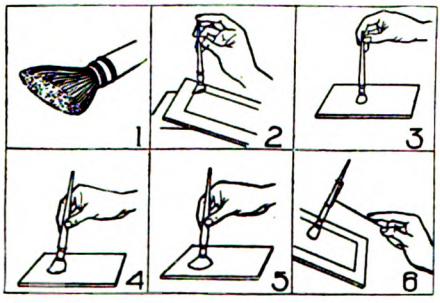
Concerning Bromoils

Last month we had the good fortune to present to our readers examples of Mr. Schaaf's

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excellent bromoil prints. We think it may be widely acceptable to give the procedure in some detail, seeing that this process is just now so very much in favor. The bleaching bath used was that worked out by the demonstrator, who gave us his working formula, viz: Water, 10 ounces; copper sulphate, 40 grains; sulphuric acid, 2.5 minims; potassium bromide, 40 grains; potassium bichromate, 3.5 grains; chrome alum, 8 grains. This does away with the need of a separate sulphuric acid bath. A well-developed dry bromide print was immersed in the above bleacher for five minutes at 90° F. As the print is dry some little care is needed to guard against uneven flow, which would be likely to result in markings. After bleaching, the print is washed five minutes, then it goes into a fixing bath—3 oz. hypo per pint of water—for another five minutes. The print is now well washed to remove the hypo, which, if left in the paper, prevents it drying thoroughly. If the print be not refixed the silver left in it will darken with time.

The print is now ready to be pigmented in the usual way, which is too well known to need description. But there are a few minor points that are worth mention. The chrome alum



hardens the gelatin, so that it will stand a temperature of something like 120°. We are not very likely to want to put it to quite so severe a test, but the practical point is that if for any reason we find that the pigment is not taking kindly, a few minutes in water at, say, 90° or 100° will most probably put matters in satisfactory order. The above bath seems to suit most, if not all, brands of bromide paper of the ordinary or smooth surface kind, but the so-called matt or platino-matt surfaced papers are not suitable for this process at all. Ordinary litho ink is quite suitable for use. If the ink happens to be a little too stiff or "hard," it may be softened or made less stiff by the addition of a mere trace of linseed or boiled oil.

While on bromoils and kindred topics, we may add one or two little notes that are not very generally known. It is essential that the pigmenting brushes be kept very clean. One of the best removers of greasy ink is carbon tetrachloride, obtainable from any up-to-date chemist. This is in every way to be preferred to the somewhat risky petrol. The bleaching bath may be used over and over again till it ceases to work or gets inconveniently frothy from the dissolved gelatin. Half the secret of success consists in starting with a bromide print that has been thoroughly well developed.

Retouching Pinholes on Negatives

For covering pinholes or scratches on negatives a carmine watercolor is generally used, thinned out to the proper density with water. This is applied with a fine-pointed camel-hair pencil. But it generally happens that, when the color is dry, it not only fails to cover the hole, but collects around the edge, forming a darker ring and making the hole worse than before. To obviate this difficulty, make a retouching varnish of one part of resin dissolved in ten parts of turpentine and rub it lightly over the hole. This will dry in a few seconds and the color can be applied at once. Another plan is to warm the negative slightly before retouching.—*Revue Photographique.*

A Tip in Working-up Sketch Portraits

In these times of rush and tear, one is always on the lookout for some way of saving time. I hit on quite a good idea the other day and thought it might be of some use to fellow-workers.

When pencil sketch prints come through to the finishing-room, the finisher often has to correct the parts that (to get a dainty and pretty effect) have had to be rather "let go" by the printer.

For instance, you have a portrait of a lady with a white hat on, and for some reason, probably some slight fault in the lighting or exposure, the white hat is lost in the white background, and if the printer tries to get this out he makes the face look too dark and dirty. This means a lot of extra work for the finisher. My idea was this: I got a P. O. P. print made, letting everything go except the detail and shape of the hat that did not show in the proper sketch prints at all. From this I cut out the part that I did not want and so made a mask of the hat part. I then placed this exactly in the right position on the print that I had to work up and used this like a stencil, rubbing on black-lead powder where it was wanted and softening the edges slightly to give a good round effect.

Then if you lift up the mask you will find the correct shape of the hat drawn in for you, and if you just add a few touches with rubber and powder, you will find that you have a finished print not only quickly done, but with a nice soft effect and without that hybrid look about it, which, if there is a lot of hand-work to be done, it is difficult to evade.

This is only a wrinkle, and perhaps some have found it out for themselves, but there may be some who will welcome it and find it a help, and I can assure you from personal experience that it is a great saving of time.—B. E. C., in *British Journal of Photography.*

Don't Lay Down

Those of us who have been connected with the photographic business for years, and who can remember back even to the wet-plate days, will never forget that after the holidays there

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always came a dull season when no one was expected to do business and things were allowed to shift along for themselves, until business picked up in the spring. Most of the photographers would go down to their studio every day, keep up the fire, sit around, read, smoke, etc., but as for business, there wasn't any.

It is entirely different now. Photographers have learned that they can do business right through the year; that January, February and March can all be made good months; that the weather does not influence the photographic work in the least, providing you can convince your customers and the public that they will come into a warm studio, that your pictures will be just as good then as if taken in July or August, that you are there on the job.

Now it is a fact that a great many who would like to have their pictures taken are short of funds before Christmas and the thing is put off. They may think they will put it off until another year. But if you can find a way to get after them you can get this business right in the winter season.

Flash machines equipped with smokeless bags, and with an outlet which carries away the smoke, enable you to make your negatives just as good on a dark day as any other. Just as soon as the smoke is cleared away from the holiday rush is the time to start in to get more business. If you let down or let up after Christmas, you are neglecting one of the golden opportunities of the photographic business. Keep after the business just as hard, if not harder than you did before Christmas. Remember that Easter should be made a harvest time for the photographer just exactly the same as Christmas. If it does not yield you just as large profit as the Christmas trade, it is because the field has not been worked as it should, and don't forget that the man who pushes and works all the time, not only makes more profit but he is better contented to enjoy life, both work and vacation, more than the man who hangs around with nothing to do for part of the year.—*Ohio Photo News.*

Cracked Condensers

A lantern condenser consists of one or more pieces of glass, thin enough at the edges perhaps, but thick in the centre. It gets very hot during continuous use, and, as everyone who has had much lantern experience knows, is liable to crack. As a condenser, although not made with anything like the finish of a photographic lens, since it is not required, is nevertheless a comparatively costly article, especially in large sizes, a few hints (says *Photography and Focus*) on minimizing the risk of cracking may be welcome. There are two stages at which it may occur—when it is being warmed up and when it is hot—and at each the cause is the same. Glass cracks because it expands with heat and contracts with cold, and, not being a very good conductor of heat, a thick piece may be hot and expanded in one part on one side, while it may still be cold on the other. A state of strain is thus set up, which, as the glass is brittle, may lead to a crack. It is on this account that thin glass is much less likely to break than thick, as far as breakage due to change of temperature is concerned. Lamp glasses, which are very thin, may be more easily broken by careless handling, but at least they stand the heat better, while thin glass vessels are constantly used in chemistry for boiling liquids and the like, and may be held over a spirit lamp or burner with impunity. To minimize the risk with a thick glass like a condenser, the heating must be as gradual as we can make it, so as to allow time for heat to pass to all parts of the object. The light should, therefore, be turned on gradually, and left partly on for some little time before use, to warm up the condenser. For the same reason, when it has got thoroughly hot with use, it must be protected against a sudden draught of cold air which might reach part of it and cause a crack instantly, and when the light is put out, if the condenser is likely to be very hot, the lantern should be left closed and undisturbed for a little time to allow it to cool down.

Sulphide-toning Weak Prints

Owing to the slight over-exposure necessary to produce a soft print from a hard negative, it is very difficult to produce prints that will tone well by the sulphide method. If the prints after washing and bleaching, are placed in a weak solution of metolhydroquinone or amidol and redeveloped until the image is of a red-brown tinge, and then washed and toned in sulphide, the tone will be entirely satisfactory. If gray prints and prints to be toned are together in a batch, when separating the two before toning, it often happens that a gray print accidentally gets into the bleaching bath. When this happens, instead of destroying the print, it can be redeveloped with the same developer as was used in the first instance, and the result will be a print exactly the same as before bleaching.—C. W. Roberts, in *British Journal of Photography.*

Stain Removers

A method of removing stains due to developers, etc., from negatives, originated by R. E. Blake Smith. The image is first bleached in an acidified bichromate bath, the original formula being: Bichromate of potash, 65 grains; sulphuric acid, 400 minims; salt, 1 ounce; water, 10 ounces. Personally he preferred and used the Piper and Carnegie bleacher in proportions recommended to obtain an average amount of intensification, as follows: Bichromate of potash, 10 grains; hydrochloric acid, 5 minims; water, 1 ounce. After bleaching, the plate is washed for about fifteen to twenty minutes to remove yellow stain, and the following solution flowed over: Permanganate of potash, 6 grains; sulphuric acid, 30 minims; water, 5 ounces. A few minutes will usually remove slight stains (for obstinate ones a longer immersion is requisite); but the plate should not remain in the solution for more than twenty minutes, or the image may be attacked. After removal it is placed for a short time in either (*a*) sodium sulphite, 6 grains; sulphuric

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acid, 8 minims; water, 3 ounces; or (*b*) a one in ten solution of sodium bisulphite lye, which will remove the residual tint given by the permanganate. Mr. Sellors employed the latter as being simpler. The plate is next washed for ten minutes and re-developed, preferably with amidol. The process does not perceptibly affect the gradation of the negative, as might be thought, or alter its printing value.—*British Journal of Photography.*

A Trimming Guide

When trimming a print it is often quite as important to make sure that the sides of the picture are parallel with lines in it as that they are straight and square with each other. I have made a cutting guide (says R. Hassall in *Photography and Focus*) which in this respect seems to be just what is required—at least, I should be very sorry to be without it. Selecting a waste negative with a couple of perfectly straight, clean-cut edges to guide the knife, I put it in ferricyanide and hypo until all the image had vanished, and then washed and dried it. With a tee-square as a guide, I then ruled it with a series of parallel lines a quarter of an inch apart in both directions, making them as accurate as I could and square with the sides of the plate. They were ruled by scratching through the gelatin with a pricker and filling them in with a trace of Brunswick black, which was wiped off the rest of the plate. When the black is dry the guide is finished. Putting the ruled side down on a print, the picture is clearly seen, and one or other of the lines is easily made to coincide with the straight line in the picture; when this is so, the guide can be held firmly down and the cut made. It is better not to attempt to make two cuts with two sides of the glass, but to keep to one edge as the cutting guide. In my experience it is hard to find a glass plate with two good edges making an exact right angle.

Mounting Large Prints

A very good method of mounting enlargements of size 24 x 18 and upwards, is the following: A smooth board suitable to the size of the print, or a clean table-top, receives the print face down, the corners of the print being fixed to it by ordinary dark-room pins. A solution of the best glue, of about the consistency of cream, is sparingly applied with an ordinary house-painter's brush, and worked thoroughly all over the print. The desirable object is not a thick coating of glue, but an infinitesimal film evenly applied all over, and to ensure this the coating, having been evenly applied, must be worked with the brush until practically every brush mark has disappeared and only an even, tacky surface remains. The print is now laid down upon the mount, and, with the palm of the hand or a clean cloth, smoothed into contact with the mount by working from the centre to the edge radially in all directions. Once the print is in contact all over the mount and free from any trace of air-bells, it can be finished by going over the surface with an ivory or bone burnisher, a piece of mounting-board being laid upon the print to prevent friction marks from the burnisher. The temperature of the mounting-room in winter should be attended to, or the glue will set before the print is ready for laying down.—*British Journal of Photography.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Printing Camera. J. Trimbach. 1159296.
Developing and Fixing Tank. J. S. Wilson. 1158879.
Flashlight. J. L. Courson. 1159179.
Plate Numbering Machine. J. R. Stephenson. 1159126.
Daylight Loading Holder. J. Donald. 1158902.
Film-treating Apparatus. J. C. Wright. 1158615.
Motion-picture Film. J. Tessier. 1159130.
Motion-picture Film. W. A. Beatty. 1158963.
Motion-picture Printer. J. E. Thornton. 1158587.
Stereopticon Object Holder. C. W. Barton. 1158429.
Camera. C. B. & C. W. Gartrell. 1159580.
Folding Camera. F. Colomiese. 1160045.
Motion Picture Camera. Ramsey & Hulburd. 1159796.
Finder and Focusser. C. E. Akeley. 1159731-1159733.
Motion-picture Film Box. C. E. Akeley. 1159732.
Motion-picture Panoram Device. C. E. Akeley. 1159734.
Motion-picture Projector. A. Muellner. 1159981.
Developing Apparatus. B. J. Nasief. 1159700.
Lantern Slide Changer. S. O. Kastner. 1159681.
Kinematographic Film. L. Gaumont. 1159924.
Printing Apparatus. R. W. Kittredge. 1159955.
Printing Frame. A. H. Wallace. 1159441.
Printing Machine. W. E. Grote. 1159373.
Roll Film. J. E. Brewer. 1160037.
Film-developing Apparatus. F. A. Binder. 1159565.
Motion-picture Printer. E. L. Crabb. 1159650.
Motion-picture Projector. R. F. Page. 1159791.
Motion-picture Making. J. R. Bray. 1159740.
Camera. S. Brown. 1160136.
Developing Apparatus. G. C. Beidler. 1160240.
Film Cutter. G. C. Beidler. 1160244.
Lens. Dry & Zwillinger. 1160148.
Developing Apparatus. G. C. Beidler. 1160244
Color Prints. F. E. Ives. 1160288.
Motion-picture Shutter. F. A. Berg. 1160824.
Motion-picture Shutter. B. H. Caldwell. 1160495.
Motion-picture Lamp House. Robinson & Boller. 1160671.
Motion-picture Printer. J. E. Thornton. 1160671.
Camera. R. L. Watkins. 1161556.
Iris Diaphragm. M. E. Smith. 1161739.
Print Cutter. Johnson, Bond & Connell. 1161773.
Automatic Stereopticon. Guerzoni & Pechkranz. 1161660.

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OVER THE COUNTER

HELPFUL AND SUCCESSFUL METHODS

By A. H. BEARDSLEY

OUR INTRODUCTION

DEEP down in every man's heart is the ambition to succeed. Competition forces the man of character to the front. The harder such a man tries, the greater appear the obstacles he is called upon to overcome. To the determined man, true understanding, efficient coöperation, accurate information and constructive criticism are powerful allies with which he wins. To every dealer and assistant behind a photographic counter who is in the game to win, we dedicate this new department.

The average man connected with the retail photographic business does not study enough. To become an engineer, doctor or lawyer necessitates the thorough reading of many books. Every dealer and assistant should study photographic catalogues, books and magazines with the same diligence that the law student studies his law or the medical student his anatomy. This is all right in theory, but the average man in the photographic retail business will not do it. Why? Because, after a day's work he is in no mood to read about chromatic aberration, circle of illumination, focal lengths, efficiency in shutters, overhead charges, systems of business, etc. Yet, here and there we do find a man who, though tired, nevertheless studies his business because he intends to win. This is the man we hope to help. Not, however, by prescribing technical books to read but by printing short paragraphs based upon actual store and counter experience. In addition, we will gladly answer the personal problems of all who feel that they need the help of one who knows and understands.

We ask the dealer to tell us his difficulties in store management. We will do our best to give him accurate information and real encouragement. Our resources are such as to convince him that we do know and understand his problem because we have been up against it ourselves.

We are especially anxious to help the young man or woman who is now behind the photo counter in the many retail stores of the country. This applies, as well, to department and drug store assistants. In every mercantile establishment there are always those who are ambitious. We extend to these our friendly coöperation in teaching the technical rudiments of successfully selling lenses, cameras and general photographic supplies. In short, we stand prepared to serve every photo assistant who needs immediate practical information in his or her present position in order to get a better one.

This department will positively refrain from any partiality to any manufacturer, dealer or assistant. It is our steadfast determination to make our new department a sane, practical, "down-on-earth," mutually helpful proposition open to all. We ask every one to get acquainted with us and our sincere desire to make things in the retail photographic business better for those who are in it. We will discourage all formality at the outset. This department must be a living, vigorous, practical and truly helpful meeting ground for those who intend to succeed and for those who intend to help them to success.

We have told you briefly our aim in starting this new department. Our heart is set on giving to others just that which we ourselves never had when we needed it the most. Now, those of you who are ambitious and those of you who are broad enough to back a good thing when you see it—it's up to you!

YOUR COUNTER APPEARANCE

THERE is a saying, "that clothes make the man." That's more or less debatable. However, as applied to the man behind the counter it is true. There are many customers who will stand and listen to a neatly dressed photo assistant try to sell them a camera who would never listen a moment to one whose collar was grimy, whose nails were black and whose clothes were spotted. We all must do work about a store which will soil our clothes, wilt our collars and blacken our hands, but as long as we have a clothes brush, soap and water let's use them. We may be very brainy photographic salesmen, but success often depends upon details which at the time appear to have no connection with the future.

We have seen this carelessness predominant among artists, musicians, photographers and those possessed of an "artistic temperament." Because you know something a little better than your fellows, don't think that hard-headed business men are going to excuse your looks. Today the successful man behind the photographic counter must know his business to keep his job; and in addition, he must present an appearance which is a true reflection of himself and his employer. Whether your store is on Fifth Avenue or at Simpkins' Corners, dress neatly, wash your hands often, keep a clean collar handy and then your brain will work just as well and to far greater personal advantage.

We are not advocating your shrinking from any job that will get you hot, sweaty, tired and

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dirty. Being behind the photo counter is not always the cleanest occupation in the world. However, what we do ask is that after the job is done you clean up and wait on trade in the capacity of a gentleman in appearance and manner. Too much to ask, you say? Hardly. Why? Because we have done it and it works.

A GOOD INVESTMENT

HOW many dealers give their photo assistants an opportunity to try out lenses, cameras, new methods and ideas? We now refer to the photo assistant who is in personal charge of the photo department. To him comes the fussy customer, the one who seeks real information, the type who generally has the money to spend. For the sake of illustration, suppose a customer drops in and asks about the use of Hydrazene plates. Suppose that he wishes to take some interiors by ordinary artificial light. He asks the photo assistant about exposure, development, etc. Suppose the assistant briefly remarks, "You'll find all necessary directions in the box with the plates." From one point of view he has made a sale, from another point of view he does'nt know his business. How is that? Well, let us suppose that he handled the customer something like this, "You'll find directions in the box of plates, Mr. Brown, but I find that development should be prolonged a little longer than is called for, unless the water is warm, if you wish to get the best results. Be sure and remember to put the plates through a 2 per cent. solution of sodium carbonate before developing. The first time I forgot this and got into trouble, so I am calling your attention to this important part of the process, etc." That customer is going to leave that store with the happy realization that now he knows where he can get more than just the goods. He goes, but he will return many times.

The money the dealer put into a box of Hydrazene plates for his assistant to use was returned with thousandfold interest. The assistant knew what he was talking about, the customer knew that the assistant knew and the customer was transformed from a prospect into a permanent asset to the business. The same thing would have been true in the case of a lens, camera or enlarging outfit. Not all photo assistants can be trusted to bring such a handsome return, but some are worthy of their employer's confidence and to such the dealer should extend special privileges. He will find that, indeed, it is a good investment.

PROFITABLE SIDE LINES

IN most photographic stores there is always a season of the year when business falls off to a greater or lesser degree. To make up for this deficit in the year's business many dealers add other lines to their stock of photographic supplies. However, they do not add more than can be well taken care of by the regular sales force who can devote their attention to the regular and special lines without neglecting either. It has been found by experience that fountain pens, ink, flash-lights, watches, cutlery, Christmas and Easter cards, hand-colored pictures, photographic books, home projection apparatus and water colors can be profitably handled. This list is not exhaustive but will serve to set a dealer thinking up a line which he could handle to advantage in his own community.

Many dealers are already carrying other lines and have done so for many years; others have never given the matter the serious consideration it merits. Remember, however, to figure up the overhead expense, the time you think it would require to turn your new stock over and your own immediate market. If your figures look right to you and you have a market, order the goods and push them hard. It will pay.

GETTING ACQUAINTED WITH NEW GOODS

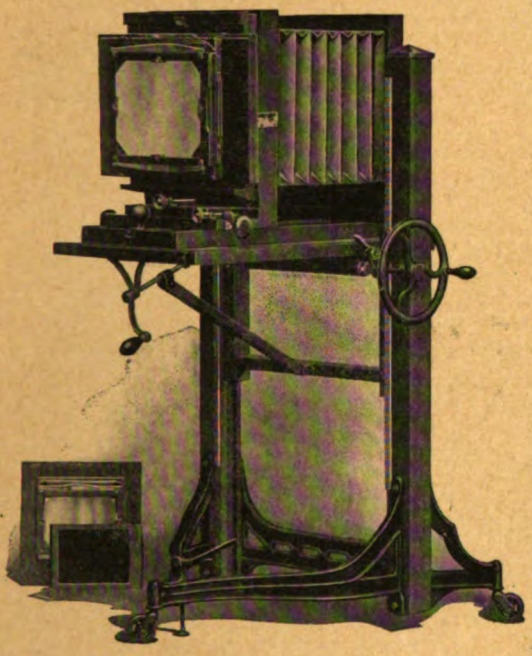
WHEN new goods arrive, especially those which require detailed selling talk, do not merely place them in stock and announce them to the public. If this is done some customer will be sure to trip you up to your own mortification. If it is a line of new cameras master the details of construction and manipulation before one goes into the show case. The very reason you had for buying them is the one you must give the customer to convince him of their superiority for his requirements. Be able to pick up any article in your store or department and describe it in detailed, forceful language. It is just such things which either sell the goods or keep them on the shelf at a loss.

PAY ATTENTION TO EVERY DETAIL

A CUSTOMER bought a No. 3 F.P.K. camera equipped with a special anastigmat lens and high-speed shutter. He was leaving town that night for an extended trip to the San Francisco Exposition. He gave special instructions about wrapping up the camera, films and carrying case, since he was to pack them in the bottom of his bag and not open the package until he reached San Francisco. About ten days later the firm from whom he bought the outfit received a red-hot letter denouncing them and their business methods. After sifting the entire transaction to the bottom they found that the photo assistant had omitted the instruction book, wire shutter release, and had given him No. 3 Brownie instead of No. 3 F.P.K. films, with the result that the customer was unable to use the outfit when he needed it most. The assistant took everything for granted. He assumed that the instruction book was in the box, that the wire release was fastened in the shutter and that the films were the correct size because the boxes were marked 3¼ x 4¼. This assistant is still taking it for granted that he will some day get ahead. We take it for granted that he will not.

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THIS OUTFIT takes double Plate or Portrait Film Holders, and the sliding carriage registers for one or two exposures on either the 8 x 10 or 5 x 7 plate.

Here is what the price includes:

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1—No. 1 Semi-Centennial Stand

1—Sliding Ground Glass Carriage

1—8 x 10 Double Plate or Portrait Film Holder

1—5 x 7 Double Plate or Portrait Film Holder

1—8 x 10—5 x 7 Adapter Back

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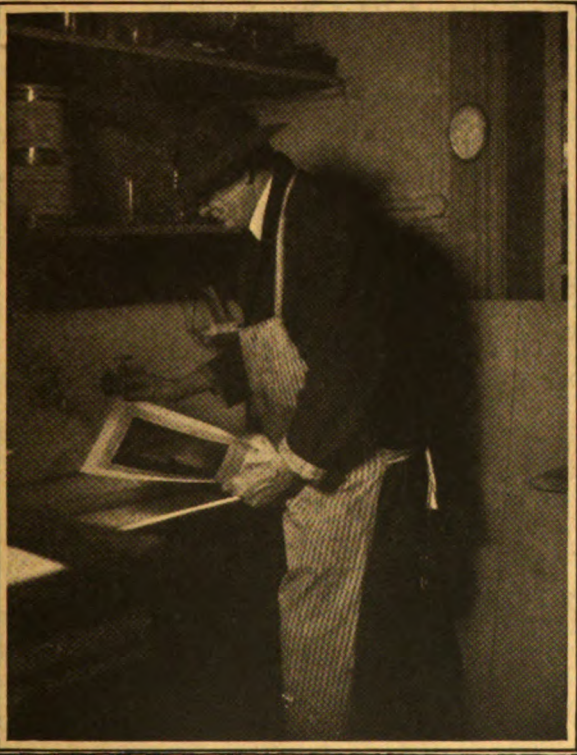
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THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII FEBRUARY, 1916 NUMBER 2



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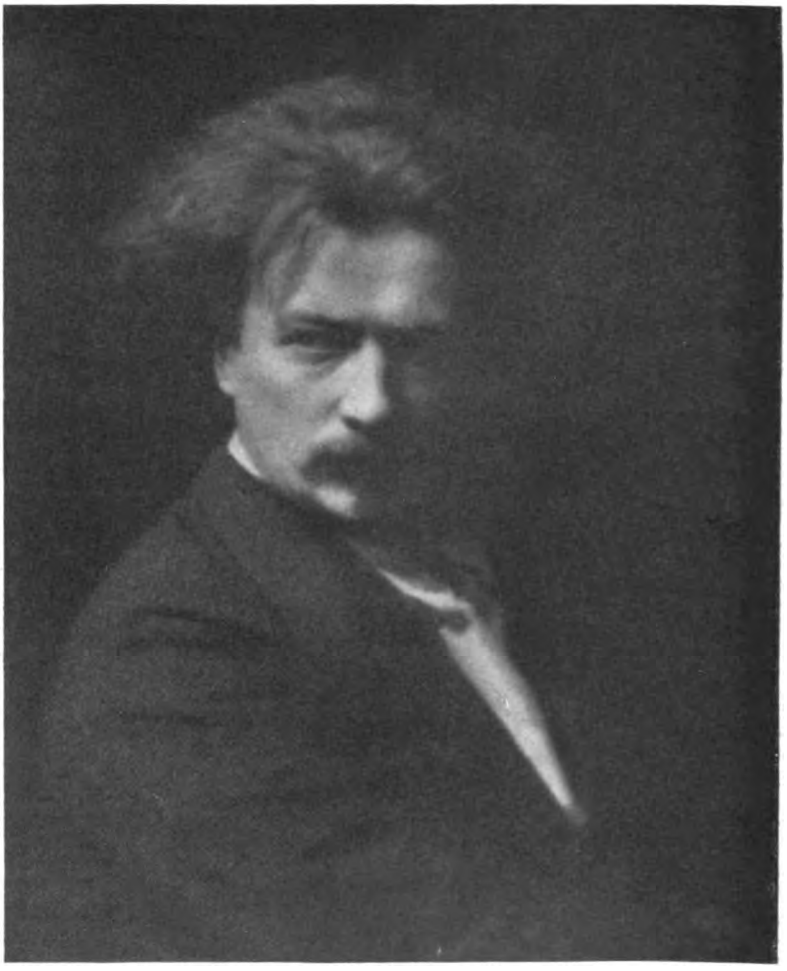
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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII FEBRUARY, 1916 NUMBER 2

THE CONVERSION OF THE SILVER IMAGE OF BROMIDE PRINTS INTO PLATINUM[1]

By C. WINTHROP SOMERVILLE

IN coming before the Society with this paper I much regret that I am compelled to state the effects of the process without the cause. During four years' patient research, however, I was unable to get any outside information on the subject whatever, and my results were obtained by almost blind experimental work with few and vague theoretical chemical considerations to guide me. My investigations were prompted by a call for two very desirable features in the bromide process, both of which could then only be obtained in the platinotype and carbon processes; one was permanency and the other a sepia color.

It was in the year 1887 that I first took up bromide printing. I soon saw the possibilities and superfluity of it over other printing processes, more especially in the matter of large work, but it was not till about eight years later that I started my investigations for the obtention of the two features named.

Many new formulæ for toning bromides were published about that time, and among them for sepia tones were lead, uranium, and sodium sulphantimoniate. On trial these seemed to me anything but satisfactory, and even with the present-day revised formulæ I think no better of them, especially uranium, which has the questionable property of giving up its tone by washing.

There may be some who will question my right to condemn the above processes, and substantiate their queries with graphic evidence of their value for a sepia tone, but I beg to say in part justification that I am speaking more on behalf of others than myself. The majority of photographic workers are

[1] Paper read before the Royal Photographic Society.

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not chemists, and only in very rare instances do we find a published formulæ accompanied by any chemical and physical considerations for the best working of the process; therefore, for this reason, I say that the originators of the formulæ are to blame for unsatisfactory results obtained by the majority of those for whose use it was intended. With regard to the permanency of the foregoing, no one with any knowledge of chemistry will deny that they are all of a most unstable order.

With some other formulæ for sepia tones are we any better off?

Take, for instance, cases in which the base for the subsequent tone is formed by converting the metallic deposit of silver into silver chloride by means of a mercury salt. Here we get a range of brown tones, not sepia, by reducing the bleached image with sodium sulphite, liquid, or gaseous ammonia, ammonium sulphide, etc., the resulting tone being formed of a complex amalgam of mercury and the reducing agent used. That the colored image formed by these reagents is not permanent I know only by experience, and my knowledge of their unstable construction is obtained more from text-books on the subject than from practical chemical application.

In my initial proceedings I had to decide which was of the most importance, the tone or the permanence, and I feel sure you will agree with me in saying that no tone, however fine, is any good if not permanent; therefore permanency had the prior consideration. This induced me to enter in detail upon the chemical and physical considerations of the permanency of photographic printing processe, and taking bromide, carbon, and platinum as the three most generally used for artistic reproduction, the following is a brief review of my reasoning:

Platinum, we know, is the most stable of all metals, and in however fine a state of division is practically indestructible by atmospheric conditions. Carbon also is unaffected by atmospheric influence, but the same cannot be said for all the other pigments used in the process.

Silver in a perfectly pure state is a fairly stable metal, but inferior to the others with regard to atmospheric influence, and more so when in combination with a weaker metal. Now, the image of a platinum print, if properly worked, consists of pure platinum in a fine state of division, chemically known as "platinum black," and is supported in or on *paper*. The image of an untoned bromide print is similar in every way except that the metallic deposit is generally incorporated in a film of gelatin, and is also supported on *paper*. In a pure carbon print the image consists of lampblack contained in the form of a mechanical mixture, also supported on *paper*. (I emphasize the support for the sake of comparison, as it is well known that other supports, such as linen, silk, wood, opal, etc., may be used in either process.) Light has no influence on deposited silver, platinum, or carbon, and may be discarded as a deteriorating element. The atmosphere, were it pure, would have no influence, since none of the elements are affected to any photographic extent by oxygen or nitrogen; but it is usually contaminated in a greater or less degree with other and deleterious gases.

These contaminating gases principally consist of carbon dioxide, sulphur dioxide, sulphuretted hydrogen, and carbon monoxide. Of these, sulphuretted hydrogen is the most injurious. On carbon it has no effect; on platinum it also has no effect; on silver it has a slight effect, but no human being could live in the atmosphere which contained the amount necessary to affect the silver. It will, of course, be borne in mind that I am speaking of pure metallic silver reduced from the compound salt, silver bromide. If, on the other hand, the image consisted of an organic salt of silver, such as an albuminate or a gelatinochloride, which has been reduced by the action of light, then it is a very different matter. An organic salt is extremely susceptible to even minute traces of sulphuretted hydrogen, in the presence of which the surface of a print will soon be coated with silver sulphide. A simple salt of silver, such as the chloride, is also very sensitive to the influence of sulphur in almost any form. But as these forms of silver printing do

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not come within our category, they need not be considered.

If, therefore, an image consisting of a deposit of pure metallic silver, formed by reduction from the bromide salt be perfectly freed from everything but the gelatin film in which it is supported, surely it exists in the same state of immunity from extraneous influence or contamination as the platinum, which is reduced and deposited in a precisely similar manner by an organic salt of potassium instead of an oxygen-absorbing reagent.

If the paper contain any impurities liable to affect the element it supports, the deterioration is directly proportional to the stability of the element or metal deposited on it.

If the deposit be in immediate contact with the paper, then surely deterioration would be more rapid than if it were supported in a gelatin film. Personally I am of the opinion that in all three cases the paper support is likely to fade or deteriorate before the carbon or metal deposits. I might mention here that the silver deposit on a bromide print is always in danger of a certain atmospheric effect. When a violent thunderstorm occurs in close proximity the air gets charged with ozonized oxygen, due to electrification (if I may use such a word) by continual discharges of lightning, and, to quote Watt's *Dictionary of Chemistry*, "finely-divided silver in a moist condition when acted upon by ozonized oxygen is converted into peroxide of silver;" therefore, when thunderstorms abound place all your bromide prints in hermetically-sealed glass boxes. On the question of permanency, then, of an untoned bromide print, we might say that there is but little difference between it and the other two, providing all the chemical and physical conditions under which the print should be produced have been complied with. Arriving at this conclusion I was met with the danger—which at the present day still obtains—that, in toning, the permanency was rendered uncertain by the fact of forming an amalgam with one or more metals of less stability.

There remained only one course open, to form an amalgam with a stronger metal or effect a substitution. I tried the amalgamation with iron, platinum, and gold, but probably owing to the blind manner in which I directed my experiments my results were totally unsatisfactory. Just at this time a chemical friend, who was not a photographer and could not therefore thoroughly appreciate my difficulties, suggested the application of platinum in a very fine state of division, which gave the well-known sepia deposit.

Upon trying this, both in the way of an amalgam and a deposition, and meeting with some success, I gave much further consideration to the process. It would be useless and wearying to give a detail of all my experiments, as many of them were carried out with a lack of chemical knowledge of the reactions involved and only served to reduce the limit of my endeavors.

Suffice to say that I reached a point where I could substitute platinum for the silver and completely eliminate the silver. But here I received a check—the platinum was left in the form of a black deposit. Curiously enough I came across a similar process for the same result in one of the photographic journals about six months later. The formula is as follows:

Potassium chloroplatinite .	5 gr.
Hydrochloric acid . . .	10 min.
Water	5 oz.

(Suggested by Vogel in 1887.)

This produced a fine black tone, which defied the bleaching action of mercury, and in order to prove if the substitution was complete or only partial, I applied a cupric bromide bleacher.

Copper sulphate	200 gr.
Potassium bromide . . .	200 gr.
Water	20 oz.

There was no indication of bleaching after the expiration of fifteen minutes, but upon the application of a hypo fixing solution the image rapidly faded till it reached a stage of about half its original depth of tone, when it remained permanent and indestructible. This seemed to indicate the presence of silver, and in order to prove it I subjected another toned print to the action of cupric

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bromide, and, after washing, applied a rodinal developer, with the result that the image intensified to an enormous extent and of an exquisite blue-black tone. Upon again applying the bleaching solution and dissolving the silver bromide formed, the image faded away to the weak state previously mentioned.

These experiments proved beyond question that the substitution of the platinum for the silver was only partial, and that, no matter how long the immersion or how strong the solution, the substitution was limited. While this was to some extent discouraging, it was nevertheless a great point gained on the question of permanency, and I was convinced that if platinum could be reduced to the metallic state of a sepia tint, as in the platinotype process, it could be done by other means. The simple chemistry of toning ordinary gelatin chloride prints with gold, and platinum appealed to me strongly at this stage, and I fully consulted such current authorities on the subject as Abney, Wall, Davanne, Girard, and others. I applied my knowledge by combining a solution containing platinum with one of mercury with the idea of simultaneously bleaching the silver and depositing the stronger metal. Whether such action took place I regret that even now I am unable to say, but the fact remains that I obtained the first approach to a sepia in this way. True, the process was far from being satisfactory, since unless a very great quantity of platinum was used, the print bleached too rapidly, the tone being much too light. This seemed to indicate the want of a restrainer, and upon the application of a citrate I got very near to what I wanted. I say very near, because, after many experiments, I found that the proportions of the bleaching and restraining reagents must be exact and invariable, while the quantity of platinum is immaterial, affecting only the speed of toning or deposition. The complete and best working formula I have found is:

Potassium chloroplatinite	1 gr.
Mercuric chloride	1 gr.
Citric acid	9 gr.
Water	1 oz.

The speed of the toning action with this formula is about the same as that of an ordinary gold or platinum bath with P. O. P. The tint produced is of a warm sepia, and may be varied slightly by increasing the mercury, when the tone will be somewhat lighter.

Platinum bichloride may be substituted for the chloroplatinite, but other salts, such as the ammonium chloroplatinite, do not work satisfactorily. Now, as I said at the outset, I am giving you the effect without the cause, for I confess that I am not at all sure of the chemical reaction which takes place in the process, especially as mercury is the only bleaching agent with which it will work. As a toner, the formula given has a peculiarity which, I believe, is singular.

It is well known that most, if not all, toning formulæ for bromides—the hypo and alum excepted—produce intensification in a greater or less degree, thereby engendering an uncertainty as to the subsequent depth of tone of the print. In the present case the intensification is slight, but of such a degree that the scale of gradation of a fully toned print is almost precisely the same as the original scale of black to white. The value of this is obvious, since a print may be developed in the first instance to its ultimate required depth. So much for the simple tones; there are, however, some concomitant features discovered later which are of interest.

A solution made up from the foregoing formula has a slight tendency to stain the gelatin, and it was not till quite recently that I found a remedy. While testing its powers on the bromo-chloride gaslight papers I found that the action of the mercury on these was much too energetic, and instead of increasing the proportion of citric acid I added some 10 per cent. bromide of potassium. The application produced exactly what I wanted, and revealed something else, an exquisite power of intensification and a complete absence of staining. Personally I cannot speak too highly of this feature, its effect upon "muddy" prints being very fine. One to three drops of 10 per cent. bromide of potassium to the original formula is sufficient,

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and intensification practically instantaneous. It may be applied locally, but the solution should be dilute and strengthened if required. It acts equally well for negatives, giving a fine purple-black color. The tint produced with the addition of the bromide is of a colder sepia.

Platinum bichloride produces rather a colder and browner tint. The following are some advantageous features of the process. If a print, when toned, lacks depth, it may be immersed in a bleaching solution of

Copper sulphate	200 gr.
Potassium bromide . . .	200 gr.
Water (boiled or distilled) .	20 oz.

All to remain for three minutes, rocking the while. Wash in running water for one minute and apply any developer used for bromide work. Great intensification with a return of the original black color is the result. It may then be retoned.

If, after being subjected to the bleacher the print is immersed in a hypo bath, the silver is dissolved out, leaving a light sepia image of pure platinum. A solution may be used till exhausted in platinum, but will continue active if if more platinum be added. It is advisable in large work to tone by means of a brush, standing the dish in a nearly upright position and allowing the solution to collect in the bottom. By doing this a fairly concentrated solution can be used, rendering the process much quicker and more economical.

As a test for permanency the following experiments were made: A print, one-half of which was covered with cardboard, was exposed in a window to a southern aspect for two years, and showed no trace of fading. A print was subjected to the following solutions in the order given:

1 hour in 50 p. c. ammonia; no change.
1 hour in 50 p. c. sodium hydrate; slight softening of the paper.
1 hour in 25 p. c. HCl; no change.
1 hour in 25 p. c. HNO_3; no change.
1 hour in 25 p. c. H_2SO_4; no change.
1 hour in 25 p. c. Aqua regia (clod); slight fading.

Another print in hot saturated solution of bichloride of mercury. No change.

A last and not unimportant feature is a great hardening action on the film of such an extent that a print may be toned by leaving it immersed in a solution for any time up to four days without fear of blisters. A solution may be heated up to 90° F., the action being thereby quickened. It works equally well with all brands of bromide paper, although toned papers are inclined to give an unpleasant yellow tint to a finished print if the toning is protracted.

In conclusion, I would like to say that this paper is one of many endeavors to raise the bromide printing process with its illimitable possibilities to a far greater and more deserving height than it has at the present day attained.

Some thanks are due from me to one of our greatest authorities on photographic chemistry, Mr. E. J. Wall, for information on the subject of the substitution of platinum for the silver of a bromide print.

To neglect advertising is like resolving never to travel in a motor car or use the telegraph and telephone.

THE difficult situation often contains the germ of advantage.

ADVERTISING and a good front attracts trade, but only the photographer himself can hold it.

DO the new thing; make the most of your fresh point of view.

PUT the loud pedal on quality and workmanship, and then live up to your advertising.

THERE are two things your customers are interested in—Quality and Price.

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CINEMATOGRAPHY AS A SIDE LINE

THE uses to which motion pictures are put are rapidly multiplying, and the live professional or commercial photographer who is desirous of branching into new l nes of work can make motion picture photography a most profitable part of his business. Heretofore, the high cost of the necessary equipment and materials, and the somewhat restricted market for anything except photoplays, have made this latest development of photography of little value to the permanently located portrait and commercial photographer. The recent advent of the weekly news films of current events, and the adoption of motion pictures for advertising, educational, and other purposes, has opened a most profitable field for this work in almost any locality, so that now the professional who wishes to tackle this highly interesting work can do so in full confidence that the financial returns to be obtained will more than justify the investment and work necessary.

The local happenings provide almost any number of subjects for work to be done for the local theatres, and for the publishers of the news films. Theatre managers have discovered that nothing will draw such goodly-sized audiences and box-office receipts as motion pictures of a local interest, and they will pay good prices for this work to the photographer equipped to handle it properly. The negatives obtained of important events can be sold to the publishers of the news films at very good prices, usually from $25 to $100 for the average length of from fifty to a hundred feet. Many manufacturers and their advertising managers are adopting the use of motion pictures for advertising purposes, especially for demonstrating products that cannot otherwise be shown to the prospective customer, such as heavy machinery, etc. The photographer who understands the requirements of this work can obtain very good rates for his services. Then, too, there are an almost endless number of subjects for work in the studio during otherwise dull periods, such as the preparation of trick films, titles, and the like, all of which are in good demand.

The question of suitable equipment at a reasonable price has been greatly simplified since the advent of American-made cameras. A very few years ago it was almost impossible to purchase a domestic-made camera, and the imported machines sold at from $400 to $3000, the cost of the other equipment being in proportion, and these prices were almost prohibitive to the small photographic practitioner, to say nothing of the difficulty of obtaining repairs and other appliances. Since the increasing competition among American manufacturers it is now possible to purchase a motion picture camera capable of doing good work for less than $100, and a complete outfit of camera, tripod, and finishing equipment can be acquired for less than $200, a very small investment, considering the returns to be obtained.

The ideal type of camera for the professional who wishes to make this a side line to his regular business, is one that in design is compact, light, and firmly built, the enclosed magazine type being much preferred to a camera having outside film magazines, the latter being much more liable to derangement and accidental fogging of the film. The mechanism is of great importance, since on this depends the steadiness of the projected picture. The ideal intermittent film-moving mechanism is one having the least number of bearings and other wearing parts. The intermittent shift of the film must be very precise, as the least inaccuracy would be magnified many times in projection. The capacity of the camera, or rather of the film magazines, need not be very great, the one or two hundred feet length of film being sufficient for any scene one might be called on to take.

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The lens equipment should be an anastigmat of two or three-inch focal length, with the usual speed of F : 3.5, and mounted in a good and precise focussing mount.

The different makers of high-grade lenses have all brought out motion picture lenses of their own, so that the photographer who has had experience with and prefers any particular make of lens can have his favorite make fitted to his motion picture camera. A lens of two or three-inch focal length will give remarkable depth of focus at the large relative opening of F: 3.5, it being necessary to stop down only to prevent overexposure. The advantages of having a lens of such good speed for motion picture work are very great, as the work is necessarily instantaneous in nature, and therefore only a large aperature will allow of pictures being taken indoors or in poor light. The shutters on motion picture cameras are of the fan focal plane variety, and it is an advantage to have one that is adjustable for different speeds, or length of exposure. The adjustable shutters can be set for any exposure from $\frac{1}{32}$ to $\frac{1}{2000}$ second. However, in motion picture work the necessity of high speeds on rapidly-moving subjects is not so great, as the pictures on being projected blend together so as to practically eliminate all blur due to movement of the subject. Some of the smaller cameras are fitted with fixed shutters, giving an exposure of approximately $\frac{1}{40}$ second, and with such a shutter the exposure is controlled entirely by means of the iris diaphragm. The tripod selected for motion picture work must be strong and rigid, so as to prevent all movement of the camera while in operation. For this reason it should be provided with good binding nuts and provision to take up any wear that might occur. The tripod head should have both panoramic and tilting movements, both for the purpose of panoraming and tilting the camera while operating on moving objects that require such movement of the camera, and also for convenience and facility in determining the view to be included on the film. The tilting movement could be dispensed with as not being absolutely necessary, but a good panoramic attachment is a necessity for professional work. A good and substantial support for the camera is a lasting investment.

After having selected the camera outfit, the man who intends to do his own finishing may well turn his attention to the selection of the ideal finishing outfit. Most of the apparatus used in finishing motion picture films can be made by anyone handy with tools, and therefore it is a good plan to make one's own trays or tanks, developing frames, and the like, or have them made by a local carpenter. The developing equipment may be either on the tank or tray plan, the latter being perhaps the most economical of solutions if only a moderate amount of work is to be done. A convenient size of tray is about 26 x 30, this size taking fifty feet of film wound on the plain wooden frames most commonly used. The trays can be made of wood, coated with Probus or Ingento water-proofing paint. Tanks can be made in the same way. The developing frames consist merely of square wooden frames to fit the size of tray used, the film for development being wound around the frame with the emulsion side outward. The film is left on the frame for developing, rinsing, fixing, washing, and can also be left to dry without removing from the frame, or can be transferred to a round drying drum, which can be revolved by hand or motor to insure quick drying of the film. A printing machine for printing the positives can be brought for as low a price as $25. A special printing machine is, however, not absolutely necessary, as the camera can be used for printing the positives with very good results. The main requirement for printing is a means of drawing the negative and positive films past an aperture while they are in absolute contact and register. The exposure is regulated by shifting the light to and from the negative, or by regulating the speed with which the printer or camera is operated. The printing light must be uniform and steady, a 100-watt electric bulb of the

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concentrated filament type being an ideal source.

If this brief outline of the process of making motion pictures proves interesting to some photographer who has, perhaps, never given any thought to the opportunities offered by this interesting art, the writer will be well satisfied.

OZOBROME ON BROMIDE

A METHOD OF WORKING WHICH GIVES GREAT CONTROL

By T. H. GREENALL

TO obtain a strong engraving-like print, rich in the shadows and full of soft detail in the high-lights, a very good method is to prepare a correctly exposed but lightly-developed bromide print, and then to intensify it by means of the ozobrome process. Moreover, if the work is done systematically, commencing with the making of the bromide print and continuing right through until the picture is finished, it is a process which admits of great control.

Preparing the Bromide Print

A smooth bromide paper should be chosen, one which will give a soft enlargement from the negative. This is essential. Glossy or semi-glossy papers are unsuitable. Bromide enlargements made with the use of chiffon over the lens tend to be veiled, and so also are unsuitable. What is wanted is a bright, lightly developed print, free from all trace of fog, from whatever cause it may originate.

In order to get prints of this character, the exposure should be the minimum exposure which will give detail in the high-lights, with a soft-working developer containing no potassium bromide. The following developer can be recommended for the purpose: Metol, 1 grain; potassium metabisulphite, ½ grain; sodium sulphite, 6 grains; caustic soda, 2 grains; water, 4 ounces. Fresh solution must be used for each print, and development must be completed in from two and a half to four minutes, according to the character of the negative and subject. Prints with greater contrast are obtained by using six grains of potassium carbonate in place of the caustic soda, but perhaps in some cases the character of the water supply may affect the result when caustic alkalies are used. The metol is kept separately (with the metabisulphite) in a 1 in 80 stock solution. For those who prefer a ready-made developer, ten minims of Azol to the ounce of water may be recommended.

The prints, after fixing and washing, must be hardened in a solution of chrome alum of a strength of twenty-four grains to the ounce, for ten minutes —not for longer—and then are again washed for a few minutes.

Ozobroming the Bromide Print

The bromide print may be ozobromed at once, or it may be hung up to dry and ozobromed subsequently, after a preliminary soaking in water. As different kinds of ozobrome tissue behave somewhat differently, it is advisable to keep to one kind at once. Moreover, as the silver image is to be re-developed, or sulphided, beneath the ozobrome, it is necessary to select a tissue which will harmonize with the color of the silver image. Suitable tissues are Illingworth's Gravure Special X and Gravure Platinum Black, the Special X being the better for sulphide-toned prints.

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As regards the actual making of the ozobrome, the worker may, of course, follow the instructions given with the material, but the following method appears to me to be more scientific, more certain, and more economical for the occasional worker.

A sheet of glass, a camel-hair mop (for large sizes a flat camel-hair is preferable), a squeegee, and a small honeycomb sponge or soft rag, perfectly clean and kept for this purpose only, are required, together with the following solutions:

SOLUTION A.—This is the concentrated ozobrome pigmenting solution as sold.

SOLUTION B.—This consists of water, 2 ounces; chrome alum, 13 grains; potassium bisulphate, 2½ grains; citric acid, 1 grain.

SOLUTION C consists of citric acid, 1 grain; water, 1 ounce.

SOLUTION D.—Water, 1 ounce; potassium bisulphate, ½ grain.

The "working strength acid bath" given in the ozobrome leaflets is the same as Solution B. An alternative formula is also given, which substitutes the same weight of oxalic acid for the potassium bisulphate. Solution C is prepared fresh from a stock solution which is preserved with a few drops of chloroform, or one drop to the ounce of carbolic acid. Solution D is prepared from a stock solution which keeps perfectly.

For use, supposing that it is a half or a whole-plate print which is being worked, 30 minims of A, 40 minims of B, and 10 minims of C may be taken, with water to make 150 minims. If a more delicate result is required, we may try 30 minims of A, 45 minims of B, and 15 minims of C, with water to make 150 minims, while if the bromide is of the chalky sort, a solution may be used made up of 30 minims of A, 30 minims of B, and 10 minims of D, with water to make 150 minims.

The effect of D in excess is to veil the high-lights, while citric acid in excess gives washed out high-lights. This, however, is not necessarily fatal, when the bromide print is going to be re-developed underneath. Each worker should experiment for himself with trial strips of his bromide prints which are of a similar character and have received the same development as the bromide print that is to be ozobromed.

The next proceeding is to take a piece of the ozobrome tissue, and to hold it under water for a minute, or until it is limp, and then, after draining off all surface water, to place it face upward on the sheet of glass. The solution is next spread over the surface of the tissue with the aid of the camel-hair brush, the action of the bursh being kept up for exactly two minutes. Two drams of the solution will be found ample for a piece of tissue 7 x 5 inches. The brush, of course, must be dry to start with, or, at any rate, should be squeezed out as dry as possible.[1]

At the end of the two minutes, the sponge, charged with water, is passed lightly over the tissue for a few seconds to remove the excess of surface solution, and the bromide, which should have been already soaking in water, is placed dripping with water face downward on the tissue and instantly squeegeed down. None of the sensitizing solution must touch the bromide print, either from the fingers or otherwise, until it reaches the tissue, and, once put down, there must be no attempt at adjusting. Any slipping of one paper on the other, or any loss of time in squeegeeing, would mean patchiness or loss of detail in the high-lights. Superfluous liquid is then removed with a cloth, the glass is turned over, and the two papers are left in contact for a quarter of an hour.

Development is carried out as in the carbon process, the bromide print playing the role of the transfer paper. All that is necessary is to lift the two papers off the glass by inserting the finger-nail or a knife under them at one corner, without—which is important—separating the papers, and to put them straight into water about as hot as the fingers can bear. When the softening of the gelatinous pigment causes the two papers to begin to separate, the ozobrome paper, which should be uppermost, is

[1] The brush method of sensitizing is regularly employed in carbon work and was, I believe, used in ozobrome many years ago by Rev. H. W. Dick.—T. H. G.

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gently lifted by one corner while under water, and stripped off, leaving the carbon image, buried under excess of pigment, on the bromide paper beneath. Mere agitation of the dish for a few minutes longer should get rid of the remaining pigment and lay bare the ozobrome image. Hotter water may be used if necessary.

The print is then to be transferred to cold water and washed until it is free from yellow stain. At this stage some control is possible, but only in the direction of lightening the most delicate tones by means of a soft brush while the print is under water, or by the local use of hotter water.

As has been stated above, different makes of tissue vary slightly. Not only this, but a tissue when quite fresh in from the makers may work much softer than the same tissue which has been in stock. The remedy lies in cooler water for developing, together with a slight reduction of the acid solution in the sensitizing mixture; but the chrome alum should not be reduced.

Redeveloping the Bromide Image

Perhaps the ozobrome as prepared in this way may appear strong enough, but if the print were put into hypo at once some loss of vigor is to be expected, due to the loss of the colored silver salts remaining in the bromide image. It is therefore always advisable to redevelop the bromide image, for which purpose a freshly mixed amidol developer, containing no potassium bromide, is to be used. It is not easy to decide when redevelopment is complete, so that it is essential to give plenty of time and to use fresh developer. The print is then washed and dried.

Should the finished print when dry appear too heavy, it is an easy matter to soak it in water and then to reduce it with the ferricyanide and hypo reducer. This must not be used, however, unless the ozobrome deposit in the high-lights is itself sufficient, as the action of the ferricyanide is to destroy the bromide image first in the higher tones.

A very good color is obtained by bleaching and sulphiding the silver image underlying an ozobrome in Gravure Special X. This is done exactly as in the case of an ordinary print, allowing plenty of time for the solutions to act.

Finishing, spotting, and the toning down of obtrusive high-lights are effected in the same way as in bromide work. The final print should be richer and more vigorous than the best bromide print from the same negative, while it will also possess exactly the same, or better, quality in the high-lights.—*Photography.*

HALF-TONES AND MIDDLE TINTS

By FELIX RAYMER

IT is the aim and desire of every operator in the profession knowing good work when it is shown him, to try and get all the middle tints or half-tones possible in his negatives. But it is also an equally noticeable fact that he does not at all times get them. It is often due to his being entirely ignorant as to their nature, and also in his not knowing how to get them when he wants them. If asked for what he is working, in most cases the average operator will say that he is working to get the correct "effect." If asked what the correct effect is, he will likely say it is when the picture looks right, and that is about the extent of information he can impart. Still there is no doubt that many operators get the half-tones in their true value without being able to tell how they do it.

To better understand what the half-

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tones are, we will say that they are the parts of light falling between two high lights. That is, the upper light will be stronger than the lower light, and that part of the lighting falling between these two "high lights" will be the half-tone. For example, the highest light falling on the face is usually just over one eye on the forehead. Now the next highest light will usually fall on the nose and cheek. The middle tints or half-tones will fall between these high lights. The next highest light will be on the upper lip, on the light side of the face, and the next on the chin. Between the two will come the middle tints and half-tones. So it will be seen that the middle tints must come between a stronger light and a weaker one. In doing this they serve the purpose of connecting the two, and cause what we call blending of the modelled places. It can at once be seen that the more of the high lights we can secure in the face the more of the half-tones there will be, for to have two high lights there must be a half-tone to connect them. It also follows that the smaller we can make these high lights the more of them we will have in the face. Where a great broad surface is covered with a high light, the result will be a flattened effect and a lack of half-tones.

Now to secure these little darts of light through the face it is absolutely necessary that it be done by concentrating the light at some parts of the face with greater strength than at other parts. These little darts of light are the parts on which the light is concentrated. Again, to make these little darts of light small and narrow, so that there will be more of them, can only be done by having the light near the subject and so controlled that it will only strike with its full force the parts it is desired to illuminate most strongly. The larger the light the less concentration, and, of course, the broader the high lights will appear in the face.

The half-tones will aid materially in securing character in the faces of the subjects. The fewer of them we have the more blank the expression of the face, and, of course, the less decided the character will be when interpreted in the photograph. It is by filling the face with the soft, delicate half-tones that we secure what is known as modelling. The modelling of the face is made stronger by making the high light stronger. No broader, mind, but more accentuated. In making them stronger we will, of course, increase the depth of the middle tints. The face will then show all the strength there is in it. This treatment often makes possible our very best work.

Another point to consider in working for the half-tones is that of "scale" in lighting. In every negative there should be a perfect scale of light, ranging from the highest light on down to the deepest shadow, without a break in the even dropping off of the high lights, then the half-tones, and then on into the shadows. Where there is a break, as though the shadows had broken away from the high lights, it is caused by too great a concentration of the light. In other words, the subject is posed too close to it and the opening is too small. Move the subject about twice the distance from the light and make the opening at least twice as large as formerly.

If your light is a small one and you are compelled to pose close to it, and you have the hard breaking away from the high light, which usually occurs on the shadow side of the face where the cheek goes off into shadow, you will have to use a head screen on the light side to soften the light on the face. In other words, cover the head with the white head screen and thus reduce the strength of the light on the light side of the face. By so doing you will bring it down to the shadow side in better balance.

Of course the wider we can make the "two poles" of this scale of light, the more high lights and half-tones we will have. I mean by the "two poles" the two extremes in the scale, the high lights and the shadows.

The higher we can make the highest light and still preserve the suggestion of flesh, the better for the purpose of getting all the middle tints possible. On the other hand, the deepest shadow should be made as deep as it can go without losing the detail in it.

To accomplish this result in its best

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form it will be seen that the operator must have a full understanding of the plate that he is using. If he has a plate requiring strong lighting to get roundness in the result he must know it, and if the plate has to be lighted rather in a low key of light he must be fully aware of the fact. It is well known to our best workers that one plate will require a more brilliant lighting than an other. If this is not done the result will be flat and thus the half-tones will run one into the other by climbing over the high light and in this way destroy roundness. If the plate require a softer lighting but a brilliant effect is given it, the high lights will be too high and the half-tones will hold back, and the shadows still farther, and so give a hard, metallic appearance to the high lights. Of course it is possible to make soft, delicate work on the plate requiring the brilliant lighting, but it will have to be done by overcoming the natural inclination of the plate. Thus the operator will have to be fully acquainted with the natural tendency of the plate he is using.

To get the little darts of light in the face as they are wanted, the lighting will have to be made for each face. Operators have made the claim that every face should be lighted for itself. There is no difference in the lighting of different faces except in the one point of concentration, or in getting the high lights small and narrow, in other words. But every face will have to be lighted for the concentration, owing to the fact that some faces will naturally cast more high lights and stronger ones than others. If the flesh is moist the high lights will dart out with but very little effort on the part of the operator. All he has to do in a case of this kind will be to get the light falling on the face from the right direction, and the concentration will take care of itself. But where there is very little moisture in the flesh, but rather a hard, dry look to it, considerable judgment will have to be used in order that the little high lights may be brought up to their best tone. To accomplish this result the subject should be placed under the light at its full opening first, and if the high lights seem to run together, forming a wide surface of light from the top of the forehead on down to the mouth, it will be so flat that the result will show a loss of roundness. Now, after deciding that the high lights are too broad, begin to make the opening in the light smaller, and at the same time move the subject closer to it, and keep this up until you can see each light come out for itself. The first to appear stronger will be the one on the forehead, next the nose, next the lip and the chin, and then a warm half-tone on the shadow cheek. All between these points of light will be the half-tones. They can be secured in any face if the idea as suggested is followed out. The reason for moving the subject nearer the light is to keep it falling on him from the right direction. Remember there are two conditions in lighting the face, and the one of greatest importance is that of direction, and the next is concentration. Without both the resulting negative will be a failure, although there are various opinions as to the degree of concentration. ome prefer a very accentuated result, while others will like the softer effects.

The object in making the light smaller was, of course, to make the high lights smaller, for the larger the light used the larger the high lights are bound to be.

After getting the half-tones in the lighting make sure that your developer is of the right nature for your plate, so that all of these little darts of light may be preserved in the negative. Be careful and do not go too far in the developing, for the farther the negative is developed the less concentration and accentuation there will be, and, of course, the fewer the high lights and half-tones. Where the negative has been developed to the right density each high light will stand up for itself, but if it is carried too far the lights will run together. They will thus smother the half-tones between them, and then instead of having many little darts of light there will be the old, broad band of light extending from the forehead to the mouth, and often even farther than that.

The negative should be developed for what was desired in the lighting, and the lighting should be made for what is desired in the finished picture. If either

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has been done wrongly the entire result will be wrong. If the lighting effect is not there it cannot be placed there by the use of developer, neither can it be done by trying to model in the retouching. On the other hand, if it was in the light as it should be, and the development is at fault, there is but one thing to do, and that would be to reduce the negative after fixing. This will help matters but will not make it perfect.

The highest light should be the key to development. Let it go as far in the emulsion as it can go without beginning to spread to the other high light that falls just under it. Its neighbors should show a difference in strength, even while the plate is developing. If they all come up together, they denote overtime or flat lighting (too little concentration of the light and the subject too far from it).

The running together of the high lights is nothing more or less than the halation of the high lights, which is caused by letting them run along the glass plate until they join with another light, and so on to the end, making a broad band of light in place of the little darts that go to make character.

TWO POINTERS FOR THE PORTRAIT PHOTOGRAPHER

By A. E. MURRAY

SOME people think that portraits and faces are the same thing, but a moment's thought will show that the word portrait means simply that which portrays, *i. e.*, in this case, that which reveals the person photographed and something of his character. Now it is quite true that the face contains some of the most expressive parts of the human body, such as the eyes, and—to a still greater degree—the mouth. But, as a matter of fact, we do not recognize our friends by their faces nearly as much as we imagine. Most of us are too short-sighted to recognize a face at a distance of fifty yards or more. But we are generally able to recognize the owner of the face by a hundred little ways—the way he walks, or holds himself, or the way he wears his clothes. Everyone has many little mannerisms peculiar to himself. Many of these are photographable. Only a certain number of these will be *pleasing* in a print, and, of course, only these should be photographed.

The essential thing is that the portrait shall be easily recognizable, and this may often be accomplished although the features are not shown. I once read the story of a cobbler who worked in a small shop which was sunk below the level of the street, so that through the window he could only see the feet of those who passed by on the pavement outside. But he knew all the inhabitants of the town at once *by their boots!* I do not think we need go as far as that; but if the reader will look carefully over any good collection of figure studies, he will find among them, I believe, many speaking likenesses which do not, however, show any face at all, or in which the features are indistinguishable. "Portraits without faces" would not be half a bad idea for a photographic competition, and I am sure it would produce no small amount of amusement at a local exhibition!

To photograph one's friends and relatives is doubtless often a duty. Time was perhaps when, in our photographic infancy, we pestered those friends to let us "take" them, and they—having seen examples of our previous efforts—did their best to elude us without giving offence. Now, it may be, it is we who

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seek to be saved from our friends! However, that may be, honesty is the best policy in photography, as in other matters. Therefore, in my opinion, our family portraits and groups should be quite frankly posed in the very best way we can imagine. If we produce a print of the family grouped outside the front door of their villa, nobody supposes for a moment that it is a regular habit of the family to stand all together outside in that manner. It is, on the face of it, a conventional posed group. Therefore, to make paterfamilias firmly grasp his newspaper, while his better half treats the baby in much the same way; to make the eldest boy hold a cricket bat, and the next one a tennis racquet, while the girls are busy with croquet mallets or books—to do all this is, I hold, more than foolish. It defeats its own purpose, for, of course, nobody is really expected to believe that the family were actually engaged in newspapers, babies, cricket bats, etc.—*Amateur Photographer.*

THOUGHTFUL PAUSES

HOME portraiture is a natural and logical development of studio portraiture, not a side line, but an integral part of the photographer's business. If a man prefers the suroundings of his own home to the artificiality of the studio, why not give him home portraits? The Eastman Portrait Film will be found your greatest help in this work, not only for its light weight, but for its exceptional speed and non-halation properties. The average home offers problems in lighting which make its non-halation qualities essential.

LET your window show what you can do, and let your workrooms do what you show.

THE road to success is paved with honest endeavors.

WHEN a sitter says he would rather have a tooth drawn than have his photograph taken, remember, you are not supposed to have heard the remark before.

UPSET traditions, if they interefere with progress.

DISCUSSION is only valuable when it works hand in hand with accomplishment.

ACCEPT criticism because it is your friend. Your opponent will flatter you.

DO not hide your light under a bushel.

YOU may get money for bad work, but you will never get customers.

IT takes cents to buy a camera, and it takes sense to operate it.

THE first lesson in composition is to learn the difference in a "landscape" and a "countryside."

LISTEN to photographers talking and you can tell in which class they belong: If they speak of "taking her picture" they are amateurs; but should they say, "I made her portrait," they are some "punkins."

A PENNYWORTH of labels and five minutes time spent in labelling chemicals means a big saving in throwing out unknown solutions.

NO one has ever built up a profitable business with slipshod methods.

COURTESY, individuality, honest values, and gumption are the four props of the successful photographer.

EVERY chemical, every sheet of paper, every negative incorrectly handled is a direct cut on your profit.

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"THE SISTERS"
BY ARNOLD GENTHE
NEW YORK

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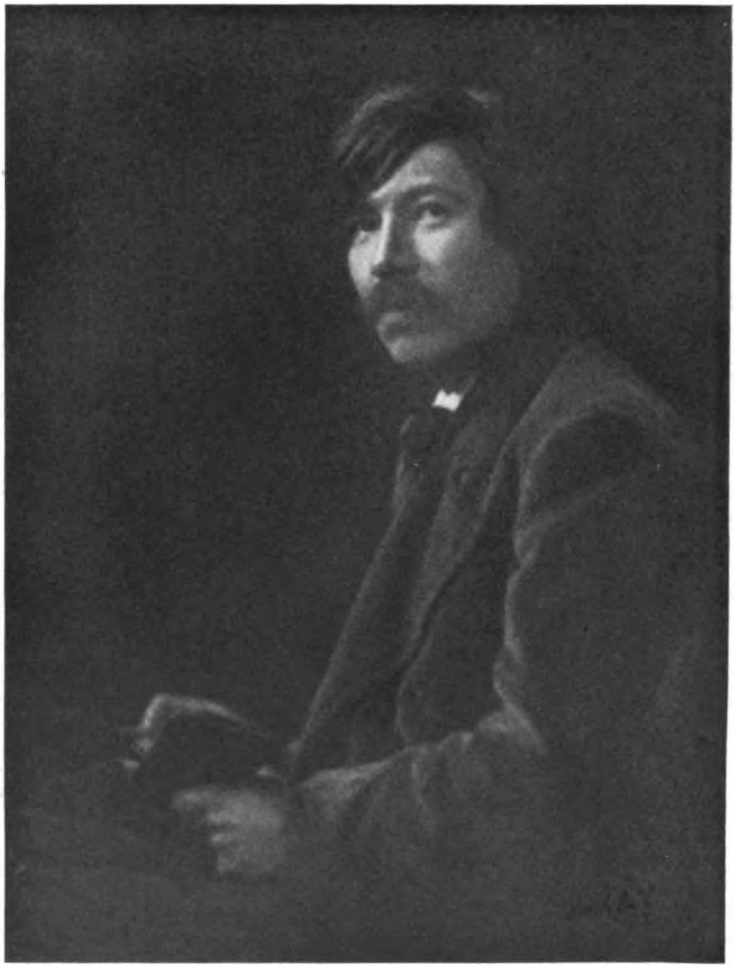
MAXINE ELLIOTT
By ARNOLD GENTHE
NEW YORK

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By ARNOLD GENTHE
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PLACING OF THE HEAD[1]

By SADAKICHI HARTMANN
(SIDNEY ALLAN)

ONE of the most, if not the most, important factor in arranging the composition for a portrait is the correct placing of the head. Without paying due attention to it the portrait is sure to prove a failure, no matter how technically perfect it may be otherwise. With it there is at least a chance of success; a basis is established to work upon.

Of course it is a new problem with every new sitter, unless the photographer has solved these difficulties once and for all (as some have) by taking everybody in the same stereotype position, forcing the sitter into one of the five to seven regulation poses that he has at his command. Those whose ambition runs a little higher, and who like variety in their work, will have to solve the same problem over and over again.

We all know that every pictorial composition should have one point of interest, to which everything else is subordinated. In a portrait this is naturally the face. It may be the forehead, the eyes, the line of the profile—but that does not belong to this chapter. All that concerns us today is that the face should present a plane of such importance in regard to shape and tint as to immediately attract our attention. No matter how large or small a part of the picture the face forms, the remainder of the space is dependent on it and will only look well if the face is placed in such a way that all other lines and light and dark planes are controlled and kept in perfect balance by it.

There are a few fundamental rules, and the very first one—which nobody can ignore with impunity—is that the face should never be in the centre of the picture. It always looks awkward; the face somehow gives one the impression of heaviness, of being out of place, and the rest of the picture is too symmetrical. It almost seems futile to mention this, as every photographer should know it, and yet there are studios all over the country that turn out, year after year, portraits (particularly of the vignetted style) with faces plump in the centre. At one of the State conventions a photographer asked me why the centre arrangement was not as good as



any other. I did not know what to answer, and finally said: "Perhaps it is for *you*—if your clients like it." Some people cannot be instructed; on the contrary, they seem to take a special pride in their ignorance.

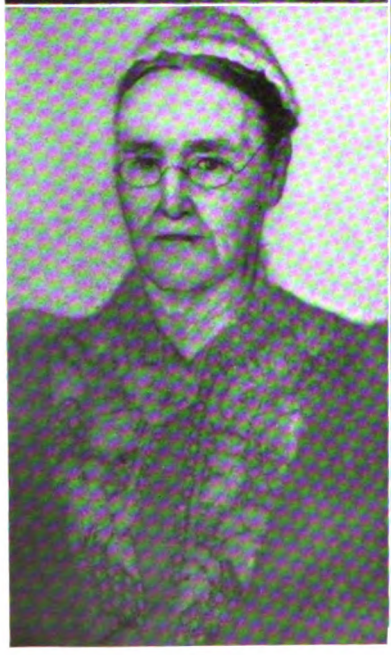
There are exceptions, however, when the face in the centre looks as attractive as any other arrangement. One of them is when the face is very big, when it occupies one-third or more of the entire space allotted to the picture, as, for instance, in the paintings of Watts or some portraits by Day and Coburn,

[1] From "Composition in Portraiture."

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"ALICE"
BY W. M. CHASE

"MAJA"
BY ANDERS ZORN

PORTRAIT
BY W. D. PADDOCK

JOHN LA FARGE
BY WILTON LOCKWOOD

REPRODUCTIONS OF PAINTINGS

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who at times make the head almost as large as the plate. In such cases the face necessarily will occupy the centre. Another exception I can illustrate by Harrington Mann's portrait of "A Little Girl with Dolls." This is an excellent composition despite the face being in the centre, because the interest is distributed over the entire figure of the little girl, and its pyramidal shape and varied half-tints form the right contrast to the background.

But in the majority of bust portraits we will find the face in the upper half of the picture somewhere near the centre. The great portrait painters of the Middle Ages established a certain principle, the so-called Golden Section (according to which all animal and plant life is supposed to be constructed and proportioned), and obeyed it in nine out of ten cases. The system of the Golden Section is too elaborate for discussion. It would confuse my readers more than help them, and this is just what I want to avoid in these articles. I will try, however, to convey the main lesson that it teaches to portraitists. The principal accepted form for portraits is, I may say, an upright oblong about 3 x 4. If you draw two diagonal lines between the opposite corners, as in Fig. 1, and divide both lines into three equal parts, you get the smaller oblong *b c d e*. The face in nearly all the portraits of Franz Hals, Titian, the English portraitists, etc., and in our modern academical painters can be found somewhere along the dotted line in the upper half of the picture, generally in the region of the circles 2 and 3. Full-face and three-quarter views are rarely placed as low as circles 1 and 4. They are the domain of profile views and faces bent toward the ground. For centuries painters have adhered consciously or unconsciously to this law, and to follow it today is as safe and profitable as it ever was. Lockwood's "John La Farge" and Henri's "Girl with Red Hair" are two good examples—one of a large and the other of a small head. The white cross marks the centre of the pictures.

In seated figures the face is apt to be placed a trifle higher, as indicated by the three circles in Fig. 2. In standing figures the face is to be found somewhere in the upper triangle, still nearer to the top edge of the picture, viz., portrait of John Sloan, by Robert Henri. In some portraits of the Old Masters, for instance in the portrait of Dürer by himself, in the Prado, and some portraits by Hals at the Kassel Gallery, the top of the head almost touches the upper rim of the picture (as indicated in the dotted circles in Fig. 2). These, however, are not full-length figures, but only show the bodies of the sitters a little below the waist line. The head is, con-

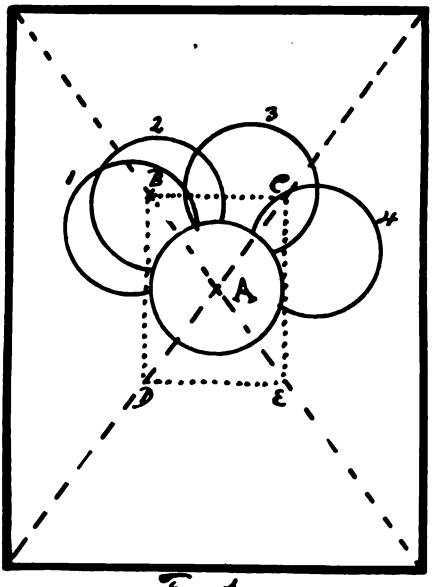


Fig 1.

sequently, large and important enough to balance the rest of the picture. In full-length figures, as, for instance in W. M. Chase's "Alice," the face could scarcely be placed any higher. Even as it is it impresses one as being a trifle too high.

The lower half of the oblong is nearly always devoted to accessories and to the body of the sitter. An exception to the rule is Fig. 4, where the head (or rather the hat) being of extra large dimensions, the largest part of the face may be put to advantage below the centre.

This may sound all very simple to some of my readers, and so it is; but they should be so conscious of these facts that they would be no longer con-

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PORTRAIT OF MY MOTHER
BY CHAS. W. HAWTHORNE

"GIRL WITH FLOWERS"
BY ROBERT REID

PORTRAIT OF JOHN SLOAN
BY ROBERT HENRI

"GIRL WITH RED HAIR"
BY ROBERT HENRI

REPRODUCTIONS OF PAINTINGS

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scious of their existence. They should become second nature with them, and rule their compositions without any effort on their side. Sorry to say this is only the case in rare instances. Even the best of photographers at times ignore these fundamental principles.

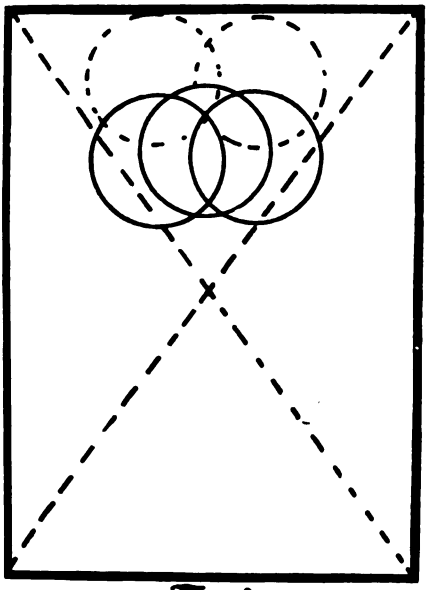


Fig 2.

But what of those other pictures by Zorn, Hawthorne, Paddock, and Coburn, the Secessionist photographer, you may ask—they surely do not follow the rules that you have just laid down? There you are right. With the modern times a new note has come into portraiture. The so-called impressionistic style, as practised by the Secessionists, has shifted the viewpoint somewhat. It is nothing new in painting. Everybody acquainted with the history of painting in the latter half of the last century knows that composition has undergone a change. It tries to be more natural and spontaneous, and does not care for tradition and conventions. It was the Orient, in particular the introduction of Japanese art, which proved to be the stimulant for the innovation, and nearly all painters have adopted some of the principles of Japanese composition (strictly antipodal to the Greek ideals of symmetry which we had followed until then). Japanese art is unsymmetrical—this is the one best word which I can find to define it—and its influence on portraiture can be traced in the four portraits I just mentioned. In Japanese pictures the point of interest is generally nearer to the edges than the centre of the pictures. It is somewhere near the dotted line in Fig. 3, and in the lower half as well as the upper half. The modern portrait painter, following this example, places the face as near the edges of the upper half of the picture as he possibly can (as indicated by the circles in Fig. 3); sometimes a part of the head even protrudes beyond the boundary lines of the picture.

Some even go as far as Raffaelli, who, in his portrait of Goncourt, placed the head where the circle is in the lower half of Fig. 3. I have never understood why, except he wished to make it look eccentric. In this he succeeded beyond doubt. In the drawing by Paddock



Fig 4

you see how the face may dominate the entire upper half of the picture. (Holbein would either have raised the shoulder line or lowered the face a trifle.) In the "Portrait of My Mother," by Hawthorne, you will notice how a comparatively small head can be shifted in the upper corner of the composition. In the "Girl with Flowers," by Robert Reid, we meet a similar arrangement of the head for standing figures. Both pictures are more elaborate compositions than most photographers undertake to make, and the harmony of effect is solely due to this extra attention to

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details. In the Reid picture it is accomplished by letting the left edge cut into the figure. This treatment always accentuates the importance of the figure; isolates it, as it were, by producing a distinct shape to which the remainder of the space is subordinated. If the background was also visible on the other side of the figure, even the merest trifle, the balance would be disturbed, as the figure in that case had to dominate both sides.



PORTRAIT STUDY
BY ALVIN LANGDON COBURN

In the "Maja," by Zorn, a seated figure, it was only possible to place the face as high as it is by making the hands almost an equal point of attraction in the lower half of the picture. The portrait study by Coburn is typical of a certain style of composition that is coming more and more into vogue, of showing only a part of the figure or head, which is strictly of Japanese origin and practised by all impressionistic painters and Carrière among the portraitists.

All this is very interesting, but it is dangerous ground to tread upon, at least for the photographer. It needs a much more thorough knowledge of the treatment of accessories than the old style. And it is, after all, a question whether the old style is not the most satisfactory one, at least for portraiture (and portraiture only concerns us), and whether it will not win out in the long run. It is still practised by the majority of contemporary portrait painters.

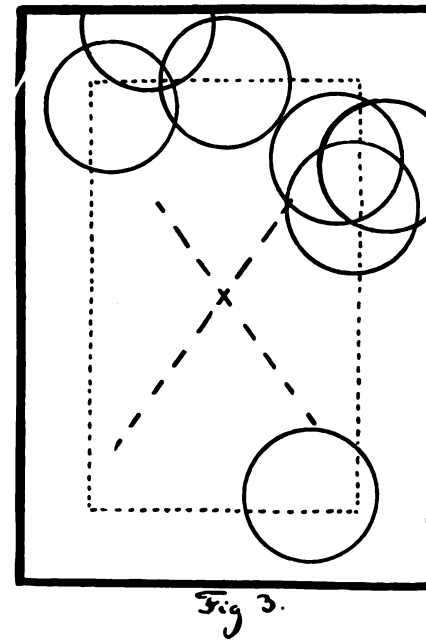


Fig 3.

A portrait (in particular a bust portrait) should be as simple as possible. It should explain itself at the first glance. We do not want to ask ourselves. How did the head come in such or such a position? There should be no contortions, foreshortenings; the head should not rest upon or lean against anything. What we want in a portrait is the face, and it should furnish without subterfuge the main attraction.

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OVER FIFTY YEARS OF PHOTOGRAPHY

By DAVID BACHRACH

PART III

HAVING now given some few of my experiences during the Civil War, which might add a little to the history of that time, though I had many others of not such general interest, let me outline my photographic experiences of that and subsequent periods.

Of course, a large part of my work before I finally concluded to open a studio was performed in portable darkrooms, both with horse teams and for small work with those carried by hand. We had many dodges for keeping plates wet, but the best plan, partly my own invention, was to have two silver baths, one with the usual solution, and another made up one-half with glycerin instead of water. This latter solution was exposed to sunlight to reduce the organic matter until the solution was clear, otherwise the plates would have been hopelessly fogged. I have thus carried plates for over an hour, and obtained perfectly good negatives. I had this to do one time on top of Maryland Heights, opposite Harper's Ferry, where we had no water to wash off the plates.

About a year after the war I fell in with Mr. William M. Chase, a former army officer of volunteers, afterward a sutler, from Massachusetts, who went into the publication of stereoscopic views, very popular at the time. I made the negatives for him for about two years, over ten thousand of them, and from the few copies I saved I must say I have never seen better results since. We went all over Maryland, the Cumberland and Shenandoah Valleys, in the Alleghenies, Washington, D. C., on the Hudson and Niagara Falls. At the latter place we were handicapped with lenses rather slow for real instantaneous views of the rapids, so I went back to an old experiment, and used the front lenses of a celebrated make of French field glasses, which required very little stopping down. With a home-made drop shutter we make perfect views of the spray of the rapids. If you recollect that the process was at least thirty to forty times as slow as our present plates, it will be seen that it was no small accomplishment. I kept into more or less intimate business and friendly relation with him for many years after I opened a photo studio.

In 1868 we were called on by Vice-admiral Porter to photograph the graduating class at the U. S. Naval Academy. The people there built a studio for us, and there I was really for the first time proprietor of a studio where only a good class of portraiture was made. This led the next year to my opening up in Baltimore. During all that period, albumin paper took the place largely of the plain paper, and the "double albuminized" or brilliant surface took the place largely of the single type. The troubles of blisters and measliness used to worry us a great deal. But about that time I invented what was afterward known as the "self-toning" process. The *British Journal of Photography* acknowledges my claim to this, although I did not publish it until the issue of Wilson's *Mosaics* in 1888. The reason was I only applied it to plain paper, and years of trial with albumin paper failed of satisfactory results.

The result of that publication was unique. In 1891 or '92 a party in Newark, N. J., advertised and sold "self-toning" paper with collodion emulsion. In the article I published on "Some of the Uses of Chloride of Gold," I mentioned that I used the same in the "salting" solution, and after it was silvered, and printed a simple immersion in the hypo fixing bath both toned and fixed it.

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The Eastman Company afterward made and sold it, and were threatened with suit by the party who had patented the method. Mr. Kennedy, one of their attorneys, called on me, having heard that I had published the same. With the aid of Mr. Wilson we had it hunted up and that ended the matter, as the publication invalidated the patent.

Another invention, which I gave freely at that time, was a method of getting a clear photo print on painters' canvas by the "print-out" method, the developing process then in use giving very poor results. Paintings on canvas over photo portraits were then largely used, and I think we made over two thousand of them with our solar cameras. They were as good as prints on paper. Various journals at the time published my method both in this country and Europe. It consisted in first cleaning the oil partly with a solution of ammonia and then hardening the same with acetic acid No. 8. I then used gum mastic or gum benzoin in an alcoholic solution containing the chlorides, and this united perfectly with the surface, but citric acid was also used in the solution. It was then ready for silvering and printing

From 1869, when I opened up here in Baltimore, I had to acquire a little taste in posing and lighting, which took years to succeed with partially. But the advent of Sarony with the occasional access I had to his studio, and his friendliness helped me a lot, and I must also here give the credit to that splendid fellow, Falk, always open and friendly, and I gained a good deal from him.

In the 70's a lot of "secret" process men came along, who generally robbed the mass of ignorant photographers. One of them, Lambert by name, was particularly vicious and tricky. I had forestalled him here on the "carbon" process, by getting all the photographers together, and the result was that about twelve got their process and information at forty dollars each, instead of the one hundred and fifty, which he demanded. It was up to him, either accept the price, a very good one, or leave the town empty handed. But the worst scheme of all was to get the photographers to buy the "artotype" process, a most promising-looking scheme, but I knew that practically it had no value for regular studio work. Mr. Wilson called on me to join in the exposure. I was young and full of fight, and found it finally to lead to a most villainous attack on both him and myself in a photo journal. I thoroughly checkmated the fellow by issuing a pamphlet to every photographer I could reach, giving the entire absurdity of the scheme away. There were no more taken in then; in fact, but few had been. I received scores of letters acknowledging their obligations to me.

I had a similar fight with the one who first cut the price of photographs on a large scale with a fine establishment here, and he made a violent personal attack on my character. Without going into details here, I will say he received a reply which showed him up, and only facts were given, no misrepresentation. It finally ended with a verdict against him for libel in the Baltimore County court, which cost him about three thousand dollars. It was the heaviest libel verdict rendered there up to that time, and it was given by his own neighbors, as it had to be tried where he resided. I would not now enter such a contest no matter what the gain.

I must here mention one more of my favorite series of experiments in the technical part of photography. Photo-engraving was one of them. In 1873-4 I added the result of my labor to that of a man I met at the time, and we have been friends to the present time, and we took out the first American patent, an improvement on the method of Paul Pretsch, of Vienna—the swelled-gelatin process. My friend's name is Mr. Louis E. Levy, the inventor, with his brother, of the "Levy" screens for half-tone work and of the "etching machine" for etching plates. It is only necessary to mention that the process became obsolete in about two years' time, being succeeded by the etching process on copper and zinc plates, instead of the swelled-gelatin reliefs which we, at first, electrotyped in the

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battery, and later on used plaster cast and stereotyping the same. I gave this matter up, as my regular photo business required all my time. Mr. Levy remained in that line and succeeded after many severe struggles.

I will probably close the series in my next article.

(*To be concluded.*)

DETAIL OR DIFFUSION

WHICH GIVES US THE BEST IN PICTORIAL WORK?

By R. M. FANSTONE

THERE has always been a lot of discussion in photographic circles and in the photographic Press with regard to the definition of detail in pictorial work. Some photographers advocate its suppression on the ground that the story that the photograph is to tell can be told better by a few bold masses of light and shadow, with intermediate half-tones, than by a pin-point-sharp photograph in which every detail is rendered separately and with equal sharpness.

Other workers claim that a photograph is in itself a beautiful thing, and that its greatest charm is its rendering of detail, and that to diffuse or suppress that detail is robbing the photograph of half its beauty. One thing, however, is certain, that in pictorial work it has been proved again and again that extreme sharpness hinders rather than helps the artistic effect.

In the picture of microscopic definition the eye wanders over it, endeavoring to find some point in which to rest. It wanders from the principal object to its too assertive setting. No particular part of the picture seems emphasized more than any other, and very often the eye of the beholder loses itself altogether and wanders through a mass of niggling, insignificant details, whereas the resting place for the eye should be on the subject of the picture, not on the host of minor details that surround it. Some part of the picture, which should be the most important part of it, should stand out clearer than the rest to attract the eye and hold it, and make clear at the first glance the object of the picture.

Some Examples

Suppose that our subject is a woodland scene, and what attracts us is the play of sunlight on some tree trunk. That should be the principal object, and the very fact that it is more strongly lighted than the rest of the picture will emphasize the fact that it is the play of light on the trunk that is the principal object by holding the eye. Other details, such as ferns and bracken, will not be so lighted, and will therefore be subdued, but they will have their part in supporting the whole, but must not compete with the principal object. The play of light on the trunk would be nothing if taken by itself, but the other details of the picture have their part, as detail, or rather as the setting to the principal object. The fern and bracken will be subdued naturally in this instance, owing to the principal object being more strongly emphasized by its stronger lighting.

But supposing we are photographing a more evenly lighted subject, the surrounding detail is not suppressed in this way. We have to do this by throwing it slightly out of focus, or by control in printing, in which we subdue all superfluous details not essential to accelerate the value of the principal object.

Another type of subject in which a

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soft result is essential to success is that of the late evening, or dying sunset. Detail of a kind we must have, but in this case the writer refers to the detail that is felt rather than seen. Take, for instance, the shadows of such a picture as this: by having them soft and luminous, not mere shadowy black patches of paper, we suggest rather than see detail, or rather we see detail very faintly outlined, so as not to compete with the principal object of the picture. The picture of the dying sunset must be of soft diffusion to suggest the tender mystery of evening at all, and yet I knew of a photographer, after he had developed a really good sunset picture, who was disappointed because it was not critically sharp; yet to have gained a sharp negative, abounding from corner to corner in microscopic detail, would have been a libel to the tender mystery of evening.

Naturalistic Work

This brings us to our point. A softly focussed picture is more in keeping with nature than one that has been focussed and developed to gain the very maximum amount of detail. It is certainly more artistic. Any very striking definition should be on the principal object and not on anything that helps to hold the whole picture together, as the setting holds the gem.

The place for detail is to hold the picture's various parts and add to their meaning, bringing them into one great whole, but not to draw attention to itself. It is very certain that the all-over-sharp negative, in nearly every case, proves itself a failure.

To tell the story of the picture one part must be more prominent than the rest. Needless to say, the principal object alone would never make a picture. It must have a setting, but it is the artist's business to see that the setting does not appeal with the same force to the eye of the beholder as that of the principal object itself. Therefore it must to some extent be suppressed.

Fuzziness not Desirable

With regard to the "fuzzy" picture, except in the hands of the true master of photographic art, it is best left alone. To the beginner it may seem to be an excellent way of passing off his bad negatives, but such is not the case. The "fuzzy" picture makes its appeal to some, but it must not be looked upon as a possible means of utilizing wasters under the pretence that they are pictorial photographs.

True art is where some ideal is in view and we make a deliberate effort to attain it. We shall never succeed with a make-do, for we must start from the very beginning and work step by step to the realization of the ideal. To attempt to arrive at our ideal by "faking" a waste negative into what we think it might be is to court failure.—*Amateur Photographer.*

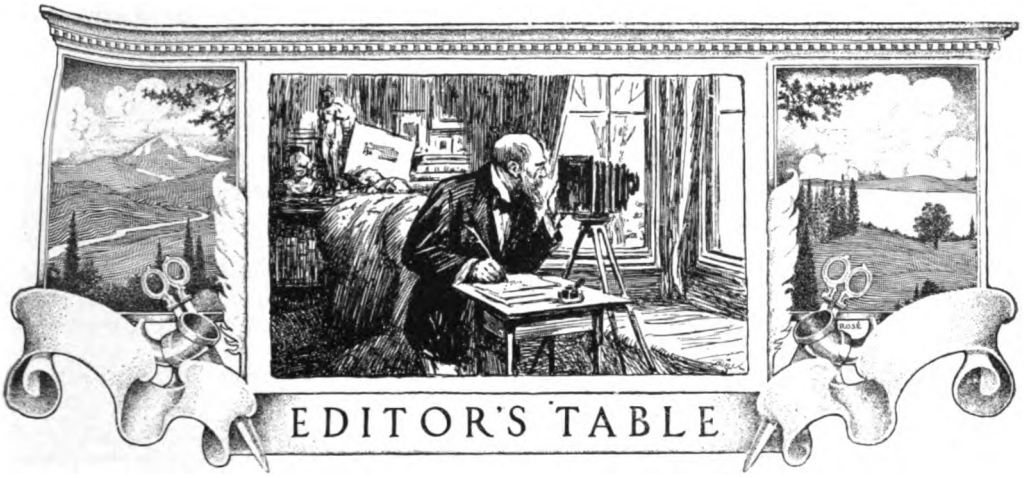
THE smaller the aperture, or the more nearly the lens approaches a pinhole, the greater becomes the depth of definition.

A DEAD black for lens mounts is made by adding fine vegetable black and a little turpentine to a strong solution of shellac in alcohol.

PERSPECTIVE does not alter with variations in the focal lengths of lenses. It is the size of the picture, *i. e.*, the amount included, that alters.

A PERISCOPIC spectacle lens makes a fairly good landscape lens. It should be used with the concave side nearest the plate, and the stop in front.

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THE NEED OF THE HOUR

IT is not a quick plate nor a new developer, neither is it a new printing proc ss. It is for operators who can feel. Experts in any and all lines become so, not so much by superior judgment and manipulatory skill as by this almost indefinable quality of feeling. In no calling can this sensibility accomplish more than in photography.

How insensibly a charming picture carries us away and beyond what is before us. Is not this the test of the merits of the composition? Is not this the effect of the feeling the artist or photographer has put into his work?

Such pictures cannot be made by chance. They must be thought out, and thought out upon the proper lines—simplicity above everything else. Let us repeat that word, *simplicity*.

Take away all suggestions of the gallery, not only in the surroundings, but in the pose.

Operators, as a class, are too conventional, the result of habitual imitation, and a belief that all work must be done within the capabilities of the lens. Try to make the lens meet the requirements of the picture, and you will find, perhaps, that its working powers have increased. Get rid of the idea that you are doing so much labor for so many dollars. Cultivate this feeling, and in its growth will come a compensation that cannot be expressed in dollars and cents.

UNDER THE SKYLIGHT

WE are perhaps a little inclined to look at the portrait of a customer from our own stand-point rather than from theirs; and when they do not appreciate what we do, we say that the worse the work is the better it is liked.

The average sitter knows and cares nothing as to the technical details of the lighting, and as little as to whether the picture be a thing of art in the matter of posing. The desire is to obtain a pleasing likeness and a pleasant expression. And it is on the operator's success in obtaining these that much of success hinges.

A glance at any dozen show cases will show how much this matter is neglected; it is one that it is difficult to write about, for so much depends on the individuality of the photographer. And very often he has the very real fault of being unable to think of the sitting from the sitter's point of view.

In spite of the universality of the amateur and a wide-spread acquaintance with the superficial elements of photography, we have not yet, unfortunately, reached that stage where the sitter can come to the studio without considerable forethought and preparation, or even without a certain degree of apprehension. All this forethought is working directly against the wishes of the photographer, and it must be his mission to restore equanimity to

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the sitter. To this end skylight procedure should be as much divorced from business as possible. The business details, price, styles, payment, etc., may have been arranged in the office or reception room; but all the rules must vanish at the curtain opening on the studio. How easy it is to write it—how commonplace the advice seems—that a courteous manner is essential in receiving sitters. Look at it as you will, so much hangs on that vital factor, the personality of the photographer himself.

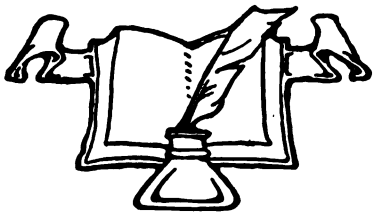
The first attention of the photographer should be to set the sitters at ease with themselves in their new surroundings. It is quite possible, by a courteous greeting and by a few moments' quiet conversation on some subject of local or topical interest, to let our sitters feel that the photographer has a genuine interest in their presence and their patronage, and that his best attention and service are being devoted to making them feel quite comfortable. It is very often a mistake to *force* matters. There are some people who like to be taken by storm—to whom one has to be as "one of the boys"—but not too obtrusive is oftenest best. This is especially the case with children, who almost invariably give a few minutes' consideration before "making friends."

As far as possible everything should be in readiness before the sitting commences, and the general arrangement, the lighting, pose, etc., and the size of the picture, so that the camera need not be wheeled around, should be decided on.

At the critical moment of exposure the sitter should, as far as possible, be led to forget the cause of the visit. The conversation can often be turned to some subject of interest, and the sitter given a look of animation which can be held for the few moments of exposure.

With very nervous sitters the tense moment of exposure is very trying. In this case some photographers make the mistake of rushing things. Abundance of rest between the exposures is often the safer plan. Let the sitter feel that you understand and sympathize with the strangeness of the position. A few words on the difficulty of feeling at ease will often cause a lady to smile gratefully and give the opportunity for an exposure.

One of the attributes of the successful photographer is that priceless one of being able to communicate his manner to the sitter. Some workers have a sort of infectious affability which has an unconscious reflection in the sitter and seems to banish any unpleasant feeling of restraint. This is a natural gift to some people; but those who have it not may, with care, acquire it.



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LEAVES FROM MY NOTE BOOK

By an Old Hand

PLAIN PAPERS

IT may seem a retrograde movement to suggest reverting to plain paper prepared at home for printing out, and yet it has some advantages—commercial advantages too.

It is not a method that can be recommended to those who are content to turn out a certain number of prints for a like number of dollars, and let it go at that. But for the man who has somewhat higher aspirations, who wants to stamp his work with his individuality and artistic feeling, it can be most strongly recommended.

The fundamental fact that must be driven home is this: One can produce prints on any kind of paper, so that quite an individual character can be given to one's work. This assumes, of course, that one can obtain a reasonable price for results; but I have found that many people are prepared to pay well for an unusual character of print, while they may apparently jib at the average price for the average print.

It necessitates personal work and one is quite independent of any manufacturer of the ordinary stock surface papers. Not that these are not satisfactory, but something distinctly novel and unlike that turned out by one's neighbors is a good pull commercially. It is not much trouble and one can prepare any quantity of paper and sensitize as required, for the process is nothing more than the old plain printing-out paper. Obviously it is not so rapid as a development paper and one is dependent on daylight, but there are few days that one cannot make three or more prints and even more on a brilliant day.

As to the choice of paper, little can be said—this must be determined by each individual worker; but as distinctive a surface as possible should be chosen. Nor should clean, hard, cut edges be always the rule. Frequently I deckle the edges of my paper, and the sheets are always cut larger than the print; sometimes with only a quarter-inch margin; at other times even up to three inches. As a rule the smaller the print the larger the margin. This need not always be kept white, frequently a tint—the merest suspicion of a tint—looks well, particularly when the prints are mounted on plain, white, rough-surfaced papers. And here is another tip: Many people seem to like to see their prints just fastened down by the top edge and the others left free. I rarely put these prints into a folder, they are more distinctive when mounted on a plain sheet.

The salting solution is made as follows:

Arrowroot	38.0 gms.
Ammonium chloride .	29.0
Citric acid	3.0
Carbonate of soda . .	3.0
Water to	1000.0 c.c.

Mix the arrowroot into a thick cream with about one-tenth of the water; then add the remainder with the salts dissolved in it; boil for fifteen minutes, with constant stirring; strain through well-washed canton flannel while warm, and allow to cool. When quite cold, remove the skin that forms on the top and pour some into the middle of the paper. The proper quantity is 3 c.c. for an 8 x 10 sheet. This should be worked all over the surface with an old, clean, shaving or long-haired brush till the surface looks dry, and then it should be hung up to dry. One can easily prepare two or three dozen sheets in an hour. The paper will keep indefinitely in this condition.

Before printing it must be sensitized, and the best formula is:

Silver nitrate . . .	160.0 gms.
Citric acid	30.0
Distilled water to . .	1000.0 c.c.

This will keep indefinitely in the dark, and should be applied to the paper by pouring on to the middle of the sheet, allowing 3 c.c. to 80 square inches, and should be then distributed over the surface with a blanchard brush. The paper may be floated on the surface of the silver solution for two minutes, but this is apt to give rise to unequal results sometimes. As a rule it will be found convenient to sensitize at night, and the paper will be thoroughly dry in the morning if hung up in the dark-room.

The above salting solution gives a paper suitable for normal negatives, but frequently I add 0.5 gm. of sodium phosphate to it and this gives greater softness. For harder results the addition of 0.3 gm. of potassium bichromate may be made.

Printing must be carried a great deal further than is finally required; in fact, I print till the highest lights are distinctly tinted. The prints are placed in a 5 per cent. solution of common salt for five minutes, care being taken that there are no airbells adhering, and this is a common trouble. Then they should be washed for ten minutes in running water and

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toned first with gold and then with platinum. This may seem a lot of trouble, but it is the only way to obtain the peculiar brownish blacks that I want and that people seem to like.

The gold bath is:

Gold chloride	0.1 gm.
Borax	7.0
Sodium phosphate	2.0
Hot water to	1000.0 c.c.

Dissolve the salts, add the gold, and allow to stand till cold. In this bath the prints should be allowed to remain till on examining by transmitted light all trace of yellowishness has disappeared from the deepest shadows, and they should be examined by weak, diffused daylight; there may still be some traces of red in the shadows. The prints must then be washed for at least twenty minutes in running water and toned in the following:

Potassium chloroplatinite	0.25 gm.
Citric acid	8.0
Salt	25.0
Water to	1000.0 c.c.

In this they should be left till they have lost every trace of red in the shadows and must be thoroughly washed, and this is an important point—incomplete washing means yellowing of the whites.

Fixation is effected with a 10 per cent. solution of hypo, and the print should not be allowed to remain longer than ten minutes in it and then washed for about thirty minutes and dried. The result should be a deep brownish-black that is unlike anything else.

Experience alone is required to teach one how to modify this process so as to obtain just those results that the artistic worker will delight in. It may take some time, and possibly it may be more trouble than a straight developed print but the results are well worth it.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Developing Color-sensitive Plates

Lueppo-Cramer points out that it has been frequently stated that color-sensitive plates should be developed longer than ordinary ones, as the yellows do not develop so rapidly as the blues. Koenig, on the other hand, denies this, but Lueppo-Cramer's experiments seem to prove that much depends on the exposure. Particularly is this the case with the so-called anti-screen plates, which as is well known contain a yellow dye as well as the sensitizer. With short exposure the light action (and the image) is purely superficial; while with a full exposure and prolonged development yellows and greens are better rendered.—*Phot. Rund.* 1915, p. 225.

Backing Plates

It is possible to obtain backed plates commercially, but for those who desire to back their own the following resume of various formulas may be useful.

Stolze and Vogel recommended:

Collodion (2 per cent.)	1000.0 c.c.
Aurantia	5.0 gms.
Fuchsin	1.0
Castor oil	20.0 c.c.

The dyes should be dissolved first in alcohol by the aid of heat and added to the collodion.

E. Vogel recommended a mixture of auramin and fuchsin:

Fuchsin	6.6 gms.
Auramin	16.6
Alcohol (96 per cent.)	200.0 c.c.

Dissolve and add to

Collodion (6 per cent.)	500.0 c.c.
Castor oil	20.0
Alcohol (96 per cent.)	150.0
Ether	150.0

Colored dextrin solutions have been recommended, but a slight tendency to split off when dry; this can be remedied by the addition of a little glycerin, but this makes the drying slow. Hélain suggested the addition of a little ammonium chloride.

Lampblack	100 to 120.0 gms.
Yellow dextrin	1000.0
Ammonium chloride	60.0
Water	500 to 1000.0 c.c.

The lampblack must be first dampened with a little alcohol, then the dextrin added, the ammonium chloride dissolved in a little water, and the whole worked into a homogeneous mass and allowed to stand twenty-four hours for the dextrin to dissolve.

Another formula by the same author replaces the lampblack by crocein scarlet, and yet another is:

Red ochre	200.0 gms.
Yellow dextrin	100.0
Ammonium chloride	6.0
Water	100.0

The dry ochre is mixed with the dextrin and then worked up with the water. The first formula gives the best results.

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Balagny recommends:

Pale shellac	120.0 gms.
Water	1000.0 c.c.
Borax	20.0 gms.

Heat till the shellac dissolves and add:

Sodium carbonate . .	2.0 gms.
Glycerin	2.0

Filter and add:

Water	500.0 c.c.

Then make into a paste with equal parts of dextrin and burnt sienna.—*Phot. Rund.*, 1915, p. 233.

It should be pointed out that while red backings are quite efficient for ordinary and ortho plates they are practically useless for panchro plates; for these the backing must be black, and Hélain's first formula should be used and the mixture well heated so as to dissolve the dextrin quickly. To apply the backing, place the plate in a printing frame, glass side out, and paint the backing on the glass with a broad, flat brush.

Flashlight

Karpinsky states that most of the commercial flash powders have the approximate chemical power of 50,000 candle-metre-seconds for every gram of powder; the Agfa powder, however, possesses 70,000 c.c. For a lens working at F.9 the quantity of 0.2 gm. at a distance of 1 meter is sufficient for most purposes. Naturally the amount of powder varies as the aperture of the lens, the distance of the light, and the speed of the plate, and the following equation represents the fundamental ratios:

$$Q = M \times E^2 \times R$$

in which M = the fundamental quantity (0.2 gm.) of powder, E^2 the distance squared, and R = the ratio of the aperture used to F.9. The unit speed of the plate is assumed to be 160 H. and D. The increase or decrease of the quantity of powder would be in direct ratio to the speeds of the plate used.—*Wien Mitt.*, 1915, p. 361.

Color Prints

Ruth & Schuller have just been granted a German patent for the production of color prints by the screen-plate process. A screen plate is prepared with particles of gelatin stained up with two dyes; that is to say, the three constituent grains are each dyed with two dyes instead of one—one of the dyes is permanently affixed to the gelatin while the other can be washed out. The plate is exposed, developed, and reversed in the usual way, and then a sheet of paper is squeegeed down to the film and subsequently stripped, carrying with it the colored positive. The picture is then washed till the soluble dye is removed, thus making the picture lighter. It is also stated that two dyes may be used, one of which will bleach and the other will not.——*Ger. Pat.*, 288598, December 15, 1910.

Rough Carbon Papers

Surry has obtained a German patent for a carbon tissue containing a rough material such as powdered glass, sand, or pumice powder. The tissue is manipulated in the ordinary way and when dry may be worked up with pastel or chalks.—*Ger. Pat.* 288677, June, 1913.

Rollers for the Oil and Bromoil Process

Wurm-Reithmayer gives the following method for making suitable rollers for the above processes: A glue roller of the required size should be purchased and also some furniture plush with as long hair and of as good as possible quality. To prevent the hair or threads from coming loose, make a solution of

Orange shellac . .	70 to 75.0 gms.
Alcohol	100.0 c.c.

by gently warming. Paint this on the back of the plush with a round, stiff, hoghair brush, using the solution freely but not so that it will penetrate through; hang up to dry for twenty-four hours. The roller should be removed from the handle and should be wrapped round with felt of from 3 to 5 mm. thickness, taking care to avoid wrinkles. Over this should be stretched some stout paper which has been soaked in water. When dry the paper should be painted over with fish-glue and the felt cut into broad strips wound spirally round the glued paper, taking care that the edges meet and do not overlap. In about twenty-four hours the roller will be dry and ready for use.—*Atel. d. Phot.*, 1915, p. 90.

Variations in Water

Although it is true that for all the ordinary photographic operations the domestic supply of water will be found quite good enough, and distilled water a needless luxury, still there are wide differences between different samples of water, and these differences may manifest themselves in photography—not to the extent of making the water unfit to use, but, chiefly, by making the operations at one place take a longer or shorter time than at another. One great cause of difference in this respect is the temperature of the water. In summer time a country house supplied by a deep well may have the normal temperature of its water ten or even twenty degrees lower than a supply which has travelled far through pipes and perhaps has been stored in a cistern. Then, again, the quantity of air dissolved in water varies within wide limits, and this has a marked effect upon the rate at which a developer, for example, will oxidize. The solid substances which the water may contain, and which alone are affected by distallation, play a small part in causing variation, compared with that which is due to air and to temperature.—*Photography.*

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NOTES AND NEWS

The Big New York Convention, February 29, March 1, 2, at Hotel McAlpin

President E. B. Core has sent us some advance information on the coming Convention, and the program will be one of unusual interest.



E. B CORE
PRESIDENT P. P. S. OF N. Y
BY PIRIE MACDONALD, N. Y.

A new idea in photographic conventions will be "having each member bring one idea from his storehouse," thereby making him a *real* part of tbe convention—not merely a passive spectator.

Another idea will be a fully equipped electric studio, fitted with all modern systems, where demonstrations will be made and results shown. In fact, demonstrations are going to be a principal feature.

A new feature in enlarging will be shown. There will be a few talks—fewer than usual—as far as possible robbed of glittering generalities. Solid, earnest, and full of practical help.

Mr. Louis B. Jones, of the E. K. Co., is going to tell how to make photographs of advertising value. Everyone knows he *knows*.

Mr. Henry R. Poore is going to give "The A. B. C. of Composition." Mr. Poore is an authority on this subject.

Mr. John Schneider, of the Baker Art Gallery of Columbus, O., is going to talk on "Business Getting."

Frank Scott Clark (a photographer of note all over the country, and rapidly making a name as a painter) will demonstrate how he made a work that has made him famous.

William Shewell Ellis (who has won two thousand good American dollars in Eastman advertising contests) will demonstrate his method of making winners.

Ira L. Hill (who has the vogue among society women as well as the swell actresses) will demonstrate how he makes those pictures that fairly pull the money from the pockets.

I. Buxbaum will show how by his system of enlargement he lifts photographs out of the commonplace and gives them atmosphere.

H. A. Strohmeyer, an ideal method of making interiors—with a spotlight—whereby the most obstinate case becomes mere play in his hands.

All these and more in the idea to be gleaned from fifty men, coupled with some yet in process of development.

Can you afford to miss it?

The American Annual of Photography for 1916

This standard annual is again welcome, and the present volume is largely made up of contributions from American workers, as the war has evidently interfered with the usual articles from abroad. There is a wide scope of topics, largely of interest to the amateur. The illustrations are profuse, and it is to be regretted that better results were not obtained by the printer with the dull-coated paper and duotone

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cuts. But it is a useful, and interesting book to have, and is well worth the price of 75 cents in paper and $1.25 in cloth. Supplied through this office.

"The Photographic Times" Merges with "Popular Photography"

Arrangements have been made by the publishers of *Popular Photography* and *The Photographic Times* to merge these two magazines, beginning with the issue of January, 1916, and the combined magazines will appear under the title of *Popular Photography*. *The Photographic Times* is the second oldest photographic magazine published in the United States and a "child" of Wilson's, having been a supplement to our Journal in 1870. The following year it was published separately by the Scovill Manufacturing Co., and has since remained a prominent factor for the amateur. While we are sorry to see the passing of this well-known publication, the combination is expected to produce a magazine which will be useful in the photographic field and it has our best wishes for added success.

The magazine formed by the combination will be published in Boston by the American Photographic Publishing Company, at the subscription price of $1.00 a year.

Annual Exhibition of The Union Camera Club

The annual exhibition of the Boston Young Men's Christian Union Camera Club, 48 Boylston Street, was held on Wednesday, Thursday, and Friday evenings, December 8, 9, and 10, and Saturday, December 11, in the afternoon and evening.

The collection of photographs was well worth a visit. Entries were made in five classes, and prizes have been awarded the following:

Landscape.—First prize, "Bleak November," Fred W. Hill. Second prize, "The Birches," Merton L. Vincent.

Portrait.—First prize, "An Actor," Arthur Hammond. Second prize, "Portrait," Merton L. Vincent.

Marine.—First prize, "Reflections," Henry C. Shaw. Second prize, "Before the Storm," Howard I. Saunders.

Genre.—First prize, "Child Study," Howard I. Saunders. Second prize, "The Smithy," Louis Astrella.

General.—First prize, "East Twenty-fifth Street," Arthur Hammond. Second prize, "Dusk," Herbert B. Turner.

The committee in charge of the exhibition was: Henry A. Stanley, Louis Astrella, and Edwin C. Howard. The judges: Miss Clarissa Hovey, Miss Mary Patton, and Miss Jean Oliver.

Making the Movies. By Ernest A. Dench. Illustrated. Price, $1.25, Macmillan Co.

Of the thousands of "movie fans" in this country there are comparatively few who have any realization of the tremendous organization behind the moving-picture industry, or of the various processes out of which the film that is thrown on the screen is finally evolved. Mr. Dench knows the moving-picture business from the inside, and in this little volume he writes entertainingly of what goes on before the camera is focussed upon the scene. All of the different steps are fully explained, from the first rehearsal of a photo play to the filming, and there is also much lively discussion of moving-picture topics. Not only will this little book be of interest to the vast audiences of people who enjoy the moving picture, but it will be found invaluable to scenario writers and all others who contribute in any way to the actual making of the "movies."

The Art of Moving Picture. By Vachel Lindsay. Cloth, $1.25. Macmillan Co.

In a series of vivid, direct, and fascinating chapters Mr. Lindsay describes the types of photo play; discusses their likeness to the old Egyptian picture-writing; summarizes the one hundred main points of difference between the legitimate drama and the film drama; indicates that the best censorship is a public sense of beauty, and takes up the value of scientific films, news films, educational, and political films.

"We are no other than a moving row
Of magic shadow-shapes that come and go,
Round with the sun-illumined lantern held
In midnight by the Master of the Show."

"The Mazda Lamp in Photography"

This is the title for a bulletin issued by the National Lamp Works of the General Electric Co., Cleveland, Ohio.

Photography is an art and the character of work produced by a photographer varies with his ability as an artist; but in order that his ability may be properly utilized it is well that he have and apply a working knowledge of the characteristics of the illuminants which he uses. The Mazda lamp has proved to be well adapted to the needs of photography and it is the purpose of this bulletin to present such data and information in regard to the Mazda lamp as will assist the photographer in his work.

A copy of this illuminating pamphlet will be sent upon request.

Commercial Work

In the smaller cities and towns there are hundreds of dollars which the photographers are losing every year along commercial lines. In many cases photographers, instead of encouraging this branch of the business, not only neglect it but are not prepared to do it when the customer insists upon having work done. If a customer goes into a studio or calls up a photographer regarding commercial work, in many cases the photographer is unable to give him the desired information. As far as portraits are concerned he has a regular price and can tell in a moment just what the pictures will cost. When it comes to commercial work he hesitates; he has no price; he does not know what to charge, and all this discourages the man who is looking to place the order. Why all this

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hesitation and this talking? Nothing can be done, if you have the tools to do it with, as readily as commercial photography. Supposing a man wants a certain photograph made. It may be a manufacturer: he wants photographs of his goods, he expects you to give him a price on that work just as quickly as he would if he came in and asked for a dozen photographs of any kind; he also expects that after you have made him quotations that you have the necessary instruments to do the work. You should at all times have commercial work, clean and neat, that you could show the prospective customers. You should be ready with a camera and the necessary lenses to make any commercial work which you may be called upon to do. The work is there and no one is getting it at the present time—*Ohio Photo New*

PHOTOGRAPHY SIMPLIFIED. BY PERCY R. SALMON. A hand-book and guide to the art of picture-taking

IT advises the young aspirant on the choice of a camera; it furnishes instructions for the dark-room and its fittings, for developing the negative; it discusses photography with films, printing from the negative, printing on gaslight paper; it carefully elucidates the problems of mounting and finishing prints, of portraiture, retouching and flashlight work, together with other valuable information. The neat 16mo. volume is further supplied with sixty-three exemplified illustrations and charts and frontispiece. 50 cents.

TALKS ON COLOR PHOTOGRAPHY

THE annual meeting of the American Institute of Graphic Arts was held the evening of December 14 at the National Arts Club, New York. President Oswald presided. Five members of the board of directors were elected, as follows: Arthur W. Dow, Arthur S. Allen, F. A. Ringler, Edward B. Edwards, Ray Greenleaf.

Treasurer Willing introduced the noted art photographer, Dr. Arnold Genthe, who exhibited results of his experiments with color photography. Dr. Genthe in an interesting manner told of the satisfactory and unsatisfactory features of the processes now available.

Dr. Nathan T. Beers then showed what had been accomplished with color photography in the surgical field. The process used by him was Kodachrome, a two-exposure method to be marketed by the Eastman Company.

NEW YEAR RESOLUTIONS FOR A BUSY PHOTOGRAPHER

1. I am going to make this year, 1916, the biggest year ever in my photographic career.
2. As I am thoroughly convinced that everybody in my town knows my old backgrounds, I am going to throw them away and get new ones.
3. I am going to attend the National Convention and the Eastman School this year.
4. I am going to get a faster lens. The old lens I am using was all right a few years ago, but now I must have a faster and better lens to help me do a better grade of work.
5. I am going to get together with the two other photographers in my town and see if we cannot all of us improve our work, our opinions of each other, and our prices.
6. I am going to give my folder and card business to the regular photographic supply house, because I have learned by experience that the price is the same to everyone and I can buy in such quantities as I can use.
7. I am going to read one or more good photographic magazines.
8. I am going to get a flash cabinet or some other means of artificial lighting, and do it now, so that I can become an expert by next fall.
9. I am going to cash all my bills during this year, for this cash discount will be enough to enable me to attend the Convention in July without any further cost whatever.—*Ohio Photo News.*

NEW ARGOTONE PAPER

ARGOTONE is the name of a new portrait developing paper that the Defender Photo Supply Company have placed on the market in various grades and surfaces. Our trials with it have been very satisfactory and it has a long scale of gradation and gives excellent blacks and whites. As its name implies, it is specially intended for portraiture and it deserves a good trial.

DEATH OF MANLY W. TYREE

JUST as we go to press we are shocked to learn of the death, on January 1st, of Manly W. Tyree. As President of the National Association he did much good work to promote its best interests. He was popular and had a host of warm friends. His untimely death will come as a real sorrow to many.

STIMULATING BUSINESS

WHAT are you doing to stimulate business during the early months of the year? Whatever else you do, you must make attractive window or showcase displays. No appeal gets home so successfully as that made by letting the public see actual specimens of your work. But the manner of showing your specimens is an important point; they must be shown in such a way that the public will notice them and be interested in them.

New and attractive mounts must be displayed. No matter how good the likeness or the technical merits of a picture may be, if it is tastefully mounted it is thereby made more pleasing to everybody who sees it. Ever since the stiff gilt-edge cabinet card went out of fashion and good-class work began to increase in size, the mount has ceased to occupy the subordinate place of being a mere backing to the print; it now plays an important part in the artistic make-up of the picture.

Just before Christmas you were too busy to think of new styles—you had enough to do in getting out your orders; but now things are quieter, and you can put some of your energy into an effort to stimulate new business.—*Professional Photographer.*

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The Professional Photographic Society of New York

This society asks you to send the *two best* pictures you ever made—no matter when—for exhibition at the next Convention. Hotel McAlpin, February 29, March 1 and 2.

It is a generally recognized truth that novelty is often mistaken for merit.

A thing that is new to the eye or sense carries an interest often mistaken for greatness.

Time and association prove whether real or only transitory is the charm that first held us.

The things that appeal to us as strong today as they did yesterday or yesteryear—in other words, "the things that live"—are the real indicators—the gauge—of our feeling and ideals.

Most of us have made a few pictures which stand out clear and distinct in our memory, while the myriads that went before and came after are a confused conglomeration between pleasure and disappointment.

We wish to get together a collection of the things *that have lived*—for the convention—we are sure it will be most interesting and instructive.

We may be able to form an idea of the spirit of American photographers. It might determine whether we are to be classed as artists or artisans.

You are asked to contribute two pictures, then come and study the collection.

E. B. Core, President.



Preserving Negatives
Masks Made to Measure
Vertical Copying
Eliminating Hypo
An Easily Made Opaque for Vignettes
Enlarging—A Method of Determining the Correct Exposure
Blue Prints on Fabrics
Still-life Work
Artificial Illuminants for Use in Cinematograph Work
Good Prints on Old and Stale Bromide Paper
Making Lantern Slides by Reduction without an Enlarger
Repairing A Leaky Bookform Slide
Avoiding Waste
Producing Canvas Effects on Prints
Intensifying without Mercury
Some Notes on Copying
Color Contrasts
A Copying Hint
Marking Negatives as a Guide for Trimming

Preserving Negatives

How are negatives best kept, so that if at some date in the far-distant future we may wish to make some more prints we may be reasonably confident of finding them in as good condition as ever? This is a question which is of interest to every photographer, to the amateur quite as much as to the professional; and before answering it, or rather in the course of answering it, a consideration of the detrimental changes to which negatives are exposed is necessary.

Such changes take two forms. There is on the one hand the series of chemical alterations which are usually called fading, although actual fading or weakening of the image is only one of them; and there is on the other mechanical injury. Of the two, it is probable that a great many more negatives are damaged mechanically than chemically in storage, at least as far as the work of amateurs is concerned.

It is usual to keep the negatives lying flat in their original boxes, generally with paper in between, but we are afraid that in many cases even this simple protection is omitted. The result of this method of storing is that some of the negatives at least are exposed to considerable pressure, especially if the boxes are full and are piled on top of each other. In bad cases this may even lead to actual breakage of the glass; but more frequently what happens is that minute specks of grit get pressed into the film and rubbed along it, even when paper is interposed, and the image becomes scratched and spotted. The proper way to keep negatives is on edge, preferably each in a separate bag; and with sufficient vertical partitions to allow of classification and grouping. As far as mechanical injury is concerned, the fewer the negatives that have to be moved in order to select the particular plate wanted, the less is the risk of damage.

Printed paper should not on any account be used for separating negatives, as, if it is left

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in contact with the film undisturbed for a long time, the printing ink will set off on to the gelatin. Either the ink then attracks the image or else it protects it from attack by the air; we do not know which is the true explanation of what happens. But the result is that, while it may be possible to remove any ink that may have set off, it is not possible to remove all signs of the lettering; the image in those parts is actually modified. Ordinary white tissue paper may be used for separating negatives; but it is better to use the bags supplied very cheaply by dealers, or else to get a quire or two of filtering paper from a dealer in scientific apparatus and to cut it up to size, keeping it clean in a plate box until it is required.

Negatives are Very Permanent

As far as chemical change is concerned, there seems to be little doubt but that a negative that has been thoroughly fixed and thoroughly washed is one of the most permanent forms of photograph. Certainly it will not contain within itself the germs of alteration and fading; and so the only problem is to protect it from adverse influences from without.

In this respect the chemical purity of the paper that is in contact with the film becomes very important; and it was for that reason that we suggested the use of filter paper (which at any rate is sure to be free from soluble chemical compounds and ought to be almost perfectly pure fiber) rather than any plain paper that comes handy. Much ordinary paper contains chemicals which have been employed to whiten it, which would be certain sooner or later to attack the silver image in the negative. When it is borne in mind that it may have years in which to exercise its action, and that gelatin is itself very hygroscopic, absorbing moisture from the air and so facilitating any injurious action that soluble chemicals in the paper might exert, it will be seen that this question of purity becomes important.

Sulphur in the Air

Varnishing the negative is certainly a great protection both from impurities in the paper and from the action of the air. The latter is only an occasional source of trouble; but wherever much gas or coal is burned, there are traces of sulphur compounds in the atmosphere, and sulphur is one of the greatest foes to the permanence of a silver image. It is for this reason chiefly that grooved boxes are not recommended for storing negatives; although the additional disadvantage of their bulk is also against them. —*Photography.*

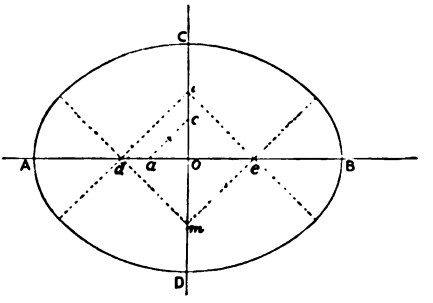
Masks Made to Measure. A Simple Method

There is nothing quite so easy as making masks accurately to measure out of black paper; and yet some people think that none but a professional should attempt it. They may do with the ready-made ones, of which a very limited assortment may be collected from the packets of sensitized postcards. Circles, and more especially ovals, may be obtained from such sources, as they can hardly be contrived by an amateur without special apparatus; but a rectangular mask may be made to the exact size required almost more quickly than old ones can be tried to see if they will fit.

The first thing to be done is to measure on the negative the exact length and breadth of the required opening. The black paper is folded into four thicknesses, taking special care that the second fold falls exactly at right angles with the first; and then, considering the folded edges as centre lines, half of the greater dimension is measured from the fold outward on the length of the folded paper, and half the lesser dimension on the width of it, also from the fold outwards. At the point where these measurements cross, all four folds are pricked through with a needle, the paper is opened up, and, using an old negative as a straight-edge, is cut from prick to prick with a sharp penknife. Result: A perfectly rectangular mask of the exact size required.

A modification of this device is found excellent for enlargements. After pasting the untrimmed enlargement on any suitable card—which need not be an expensive "mount"—the exact size it should be after trimming is measured, a piece of art paper is folded into four, and the centre cut out, as just described for masks. In this case it will be better instead of pricking through the corner to cut through all four at once with a very small gouge, obtaining a small quarter circle in each corner. The art paper mask is then pasted down on top of the mounted enlargement, and it is ready for framing.

Although it is difficult to make a small oval to mask a postcard with accuracy, large ones for masking head-and-shoulders enlargements can easily be made by the following method:



The lines *A B* and *C D* are drawn equal to the two dimensions of the ellipse. From *O*, *o a* and *o c* are made equal to the difference between *O B* and *O D*. Then drawing *a c* and making *a d* equal to half *a c*, and *o e*, *o i*, and *o m* equal to *o d*, the lines *i d*, *i e*, and *m d*, *m e* are drawn. From the centres *m* and *i* arcs are described through *C* and *D;* and from *d* and *e* arcs through *A* and *B*. The four arcs form an approximation to an ellipse.

All the drawing must be done on the back of the mask. The centre may be easily cut out by following the line carefully with a sharp penknife. The centre should be preserved for

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marking other masks of the same size by passing a sharp pencil round it. The enlargement can be mounted without trimming, and this mask pasted down on it. This will be found a thoroughly practical way of mounting an enlargement with a minimum of trouble and expense.—*Photography.*

Vertical Copying

A vertical copying installation possesses several marked advantages over the ordinary horizontal arrangement. For one thing, it overcomes the trouble connected with pinning up the copy, especially when enlarging from a small portion of it where some adjustment is required to get it centred properly. With the easel horizontal, one need only lay the copy flat and it will stay wherever it is put. Another point is that the apparatus takes up so much less room in the studio or workroom and can be kept in one place always ready for use, and also it is much easier as a rule to get plenty of light on the original and to avoid troublesome reflections. Besides this, when filters or supplementary lenses are used they only need just laying on top of the lens inside the camera.

There are several precautions, however, to be taken when rigging up apparatus of this description. It is very necessary to build all the woodwork much stronger than usual. The leverage caused by the weight both of camera and easel will be found to be greater than one would expect, and is liable to cause the parts to bend and get out of truth. The sliding platform on which the camera is screwed should not be too short and should work smoothly, but not be slack or there will be jumping and chat tering as the camera is slid up and down. This is good neither for the camera nor for ease in focussing. Some cameras will not stand the strain of vertical copying for long. The greatest strain is on the front, especially if a heavy lens be used. If the lens causes the front to sag ever so little when the camera is pointed downward, it should not be used for this work. The trouble is sure to get worse, and the camera will be strained.

For clamping the camera at the required place a screw of large diameter, not less than a quarter of an inch, should be fitted, and generally it will be found better to fit a stronger clamping device than a simple binding screw. In my own apparatus I have a small wedge, as sold at the penny bazaars for shaky windows, hung by its little chain to the sliding platform. When the camera is slid to about the right spot the wedge is stuck from below between the platform and the board on which it slides. A very slight push holds the camera in place, as the weight of the latter only makes the wedge tighter should it slip ever so little. The wedge can be pulled out and pushed in again quickly while the focussing is being done, should the camera require shifting, and the binding screw need only be brought into use when ready tc insert the dark slide.

A matter that may require thinking about before constructing a vertical copier is the method of exposing. A cap can be used, if it just fits without being tight. It is very liable to cause vibration, however, and some form of pneumatically operated time shutter, preferably one of the diaphragm description, is far better. Should a cap be the only possible method, it is best to make one of cardboard, rather loose for the lens, but very deep, so that it will slip right over it and hang on to the camera by a loop of cord. While this is not by any means an ideal method, it is less liable to cause vibration than when an ordinary cap is used.—*British Journal of Photography.*

Eliminating Hypo

Decomposition in sensitized goods is often attributed to insufficient washing, when, as a matter of fact, the real cause is more often insufficient fixing. Proof of this statement is seen in the result of a recent experiment in the Kodak laboratory on the elimination of hypo from the film of negatives.

1. The elimination of hypo from a negative depends very largely upon the agitation given to the water, very rapid and complete agitation causing twice as much elimination as is secured when the material is merely left in the water to soak.

2. The rate of washing out the hypo is practically independent of the temperature of the water, measurements made at 65°, 70°, and 80° F., all showing the same rate of loss of hypo. This result, although it appears strange and is contrary to usual belief, confirms some experiments made many years ago.

3. The elimination of hypo is very rapid in all circumstances, the amount of hypo in the film being reduced one-half every two minutes if plates are left stationary and every one minute if agitation is ensured. Consequently with complete agitation the film may be considered to be free of hypo in ten minutes, and if the agitation is less complete, twenty minutes is sufficient.

It will be seen by this that there is no necessity for washing plates more than twenty minutes, especially in warm weather when longer washing may have a tendency to soften the emulsion.—*Professional Photographer.*

An Easily Made Opaque for Vignettes, etc.

The methods of vignetting or blocking-out of backgrounds in negatives are numerous. Every printer, more or less, has his own particular fancy way, yet to my mind men spend much valuable time in hacking out teeth around a cardboard opeing. These openings generally consist of three shapes—oval, pearshape, and circular. Should the result of the first print not be to their liking, the vignette is again improved by adding cotton wool, and then another print is made.

A first-class printer does not work this way. This is his method: Having taken a piece of cardboard a little larger than the printing frame in size, he cuts a hole of regular or irregular shape, according to subject, and pastes over the opening a piece of white tissue paper (not transparent paper, but ordinary white tissue as

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used by drapers). Then he will proceed to paint a series of teeth in opaque paint on the tissue, beginning about half an inch from the edge of the opening, and broadening in width with his brush strokes as he reaches the edge of the cardboard opening. By this method he will get any effect he is aiming for in half the time that it takes to make a cut-out one.

Ready-made opaques are too expensive for general use. I herewith give one or two formulas for opaques used, based on some information gathered in America. These mixtures have been found to work and keep admirably, and are to be preferred to any others that have been tried. They keep well either in liquid form or in cakes. Should it be desired to make a quantity and keep in cake form, simply mix to stiff paste, spread out in the lids off shallow tins, such as small biscuit tins, and store away to dry. In cake form, for use simply wet a little and apply with a brush in the same manner as any other ready-made and bought opaque or water color.

To make up a most useful opaque suitable for above use, take:

Red lead	1 part
Chrome yellow	1 "
Red ochre	1 "

All obtainable from any color merchant.

These colors, being in powder form, can be mixed together dry in an old cup or basin preferably. Next add a small quantity of boiling water, sufficient to bring to a stiff paste, taking care to stir well all the time. Having done this, add a small quantity of ordinary office gum. Work this well into the solution. Providing a good quality gum is used, there is no need to add any preservatives whatever. This mixture when used will be found to be more opaque than Indian ink and the cost considerably less.

A more dense material suitable for blocking out large portions of negatives can be made of the following:

Yellow ochre	1 part
Chrome yellow	1 "
Red ochre	1 "
Black, either ivory or vegetable	½ "

Mix and grind well together, and when thoroughly mixed add hot water till dissolved. Follow by a generous amount of gum as previously described. If kept in a liquid state in a wide-mouth bottle it will always be found very useful.—B. F. Welch, in *British Journal of Photography*.

Enlarging—A Method of Determining the Correct Exposure

Estimation of the correct exposure of the bromide paper when enlarging is the principal factor in obtaining good results, and nearly all the waste of time and material involved is due to failure in this respect.

The usual practice is to include several varying exposures on one strip of paper, and to estimate the correct exposure by developing and examining this test piece. Even after long practice it is surprisingly easy to make a mistake at this stage.

The following method, besides giving an interesting lesson in the rendering of tones by bromide paper, provides a standard with which to compare our test strips; moreover, it will be found in practice that only one exposure need be given to the trial piece. A fair-sized image, say 15 x 12 in., of a good negative is thrown on the easel and the correct exposure for this enlargement is found. Six pieces of paper, each about 5 x 4 in., are then successively exposed to one portion of the image. The first piece is given one-quarter of the correct exposure, the second one-third, and so on, until we have a range of exposures bearing the following proportions to the correct one: ¼, ⅓, ½, ¾, 1, 1½. The six pieces are then developed to the limit in a normal developer and, after fixing and washing, are mounted together on a plain mount. Above each of the pieces is written the proportionate exposure which it has received.

We have now a permanent standard with which to compare future tests, and when making an enlargement we proceed as follows: A strip of bromide paper is placed on the easel and is given the estimated correct exposure. The strip is developed to the limit, placed in the fixing bath for a few seconds and rinsed. It is then examined in white light, and if the exposure happens to have been the correct one, we may proceed with the enlargement. If not, we compare it with the standard strips, and by examining the depth of the image and the various tones we determine which of these it most closely resembles. If, for instance, the image corresponds in depth and rendering of tones with the standard strip marked ¾, we know that increasing the exposure by ⅓ will give a correctly exposed print.

It will be noticed that nearly all the standard exposures are less than the correct one. The reason for this is that it will be found much easier to compare two underexposed images, and consequently the trial piece should be under rather than overexposed.

If the degree of enlargement and the actual exposures given to the standard pieces have been noted we can use them to find the speed of other bromide papers. To do this a strip of the new paper is exposed under similar conditions for the same time as was given to one of the test pieces, and by comparing the results the relative speeds may easily be calculated.

The negative chosen for making the standard strips should have a full range of tones, and the tones should, if possible, be distinct from one another, as this will facilitate the comparison. The advantage of having a full range of tones is that the standards may be used to compare the test pieces of enlargements either in a high or a low key.—W. R. Preston, in *British Journal of Photography*.

Blue Prints on Fabrics

Instead of sensitizing paper for printing by the usual ferroprussiate process, any ordinary fabric may be used. It is necessary to wash

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it thoroughly before sensitizing to get rid of any soluble salts which may have been left in it from the process of manufacture. It is then allowed to dry, and is sensitized by being immersed bodily in the mixture of ammonio-citrate of iron and potassium ferricyanide. When saturated it is taken out, drained as completely as possible, and hung up to dry in the dark.

In printing on fabric sensitized in this manner the light action must be allowed to go much further than when printing on paper, as the fabric loses much more in the after-processes. Two or even three times as long will not be found to be too much, as, if at first it seems that the printing has been overdone, a prolonged soaking in water can be relied on to reduce the image and put it right.

For printing, the fabric is best backed up with a piece of thin card of such a size that it can be folded over the card at each end and stuck down with a touch of seccotine, or with gum or stamp paper. If this is not done there is a great risk of the fabric shifting in position when it is examined to see how the printing is getting on, and so a double image resulting. Care must be exercised in opening and closing the printing frame for the same reason.

The fabric, on being removed from the printing frame, is placed in water as hot as the hands will bear for a minute, and the water is then changed. After three or four changes of hot water it may be soaked in cold water until the image has developed sufficiently, and can then be dried. Just before it is quite dry it should be ironed out.—*Photography.*

Still-Life Work

Photographers who make their first attempts at groups of flowers or fruits are sometimes misled by the advice that is given them to use mounting boards as backgrounds, without tbe qualification being added that only cold shades of gray should be employed. The warmer tones do not photograph at all as they look, and there are curious irregularities about them.

Such colors usually come much darker, even on orthochromatic plates, but there are exceptions. The writer once did a great deal of photography in a room papered with a pale reddish paper with no pattern on it at all. It made a very good background when one got used to it and realized how it would come out, which, in spite of its tint, was not far short of white.

For this reason, then, it is best to keep to white, black, and intermediate shades of gray, of which any dealer in art mounting papers or in crayon papers has a wide variety.

Instead of buying such papers for backgrounds, we may use cardboard painted over with distemper. This can be made on a small scale by dissolving a pound of size with its own bulk of hot water, and then mixing in with it a thick cream of whiting and water, to which a trace of blue may be added to make it look a little whiter; it will not affect its photography. The white can be toned down by the addition of water-color ivory black, adding a little, well mixing it in, and painting a sheet of card with the mixture. Then more black may be added and another sheet painted, then more, and so on. Each sheet of card may be painted on both sides with two different shades, and in this way four sheets will give us eight tones, which will be ample for all ordinary requirements. The distemper will be found to dry much lighter than it appears when wet, and this must be allowed for. —*Photography.*

Artificial Illuminants for Use in Cinematograph Work

In moving-picture studios a considerable amount of light is necessary, owing to the speed at which the pictures are taken, the exposure being only one-fortieth of a second with an aperture of about *f*/8. The average stage, including an area of perhaps 240 square feet, requires about 60 kilowatts of illumination, and a typical arrangement of lights will consist of 40 to 50 kilowatts expended in mercury-vapor lamps or quartz arcs arranged about 12 or 15 feet above, as a roof to the stage, and down one side to a distance of about 3 feet from the floor, and about 12 kilowatts used in some form of arc, conveniently a flame arc, about 10 feet in front of the stage and the same distance from the floor. Such an arrangement is typical of many of the stages used by the large producers of moving pictures in this country, and the importance of artificial illumination in this work can be realized when it is understood that many producers will have six such stages working at one time.—C. E. K. Mees, in *Journal of Franklin Institute.*

Good Prints on Old and Stale Bromide Paper

Doubtless many readers have a certain amount of old bromide paper—remains of opened packets, etc.—that in the ordinary way fail to give good, clean black tones with normal exposure and development, but produce prints with stained and foggy markings. The following plan can, therefore, be recommended for the purpose of making good prints from this old and stale paper. Make up a 10 per cent. solution of cyanide of potassium (this is a deadly poison, so exercise great care) and a 20 per cent. solution of bromide of potassium. Use fresh metol-hydroquinone or amidol developer, and add one drop of each solution to each ounce of normal developer. This will have the effect of clearing the whites, and allows the developer to produce clean black tones. Good prints on stale paper, several years old, have been made in this manner.—*Amateur Photographer.*

Making Lantern Slides by Reduction Without an Enlarger

The following method, as obvious, directly it is pointed out, as Columbus' method with the egg, may prove serviceable. I had taken a series of negatives to show the discession of magnetic models of chromosomes on half-plates; the enlarging lantern we possess does

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not take anything bigger than postcard size, and the matter was urgent. I placed each negative in turn against the clear side of a sheet of ground glass against the window, and photographed direct on to the lantern slide with my Sanderson quarter-plate camera. As the double dark slides had no adapters for $3\frac{1}{4}$ x $3\frac{1}{4}$, it was necessary to adopt the following precaution: a cover-glass was put into the slide and the clips turned over it, and the drawer pulled out till the slide was only overlapped by about $\frac{1}{8}$ in., and a line ruled on the projecting part of the aluminium drawer against the wooden edge of the slide. This served to show how far it was safe to pull out the drawer. The exposure had to be carefully timed, and my first rough estimate was wildly in excess, say half light number (Wellcome). Using the $\frac{1}{32}$ diaphragm, I found that 2 in. was ample on a gray day for Cadett and Neal's black-tone lantern plates, which receive the number 8 in the Wellcome Diary. As the $3\frac{1}{4}$ in. lens used was about 4 in. from the plate, the *real* aperture utilized was still less. The negatives were on the thin side, even for gaslight printing, and on contrasty Velox required but short exposure to give good prints. Of course, this method may be used for enlargement as well as reduction. Considering that most "enlarging" lanterns are provided with long-focus lenses, which, for reduction, have to be replaced by shorter-focus ones with a special adapter, the advantage of this method will be obvious.—*Amateur Photographer.*

Repairing a Leaky Bookform Slide

The other day the writer was troubled with fogged plates when using his field camera, due, it was afterwards found, to light entering the double slide where the two halves come together. This fault was overcome very simply in the following manner: Some strips of thin chamois leather, such as could be bought at a local saddler's, were seccotined all round the part where the light was found to enter, and in order to make the cure thoroughly preventive, this was continued all round the four sides of the slide. Thus an effective light trap was secured. The leather having a soft, yielding nature did not in any way interfere with the closing of the slide; in fact, it only had the effect of making the catches when in position more secure—a decided advantage. The leather when stuck to the wood was slightly wider than was needed, the slide closed till dry, and the surplus trimmed off close to the edge of the wood with a small pair of sharp scissors. In this way a perfectly neat fit was obtained. It is now some months since the above was done, and the negatives still show no trace of light entering the slide.—*Amateur Photographer.*

Avoiding Waste

Harboring rubbish is at all times a bad practice; but there are a variety of things in photography which, when they have served their original purpose, can be used for some other for which they are very well fitted. A few of these may be mentioned.

There is the black paper used in spools of roll-film. It is particularly pure, dense, and opaque, and is just what is wanted by the photographer for making masks for printing.

Then, again, the paper which is employed in the roll-film cartridges that are specially made for autographic Kodaks is an excellent "carbon" paper for copying purposes, especially when it has only to be used once or twice. It gives a very clear copy, but transfers so much of its coating that it soon becomes worn out.

Spoiled film has a great variety of applications. If we dissolve out the whole of the image with ferricyanide and hypo, we get celluloid coated with clear gelatin which is handy for printing a title with a negative. The celluloid is cut to the size of the negative and the title neatly written on it in the required position in opaque ink. When the ink is dry the film is turned over so that the writing is reversed, and is interposed between the negative and the printing paper.

Clean, thin celluloid, such as this, is most useful in printing. It completely insulates the paper from the negative, and so prevents any possible stains from damp when printing silver paper. It can be used to glaze a print in a cut-out mount, if it is likely to have much handling; and it can also be employed for squeegeeing to give prints an extra gloss, and for backing up platinum paper in the frame to protect it from damp. A long thin strip of it makes a good rapid fuse for igniting flash powder, and other uses will suggest themselves.

The celluloid itself may be cut up and dissolved in a mixture of amyl acetate and acetone to form celluloid varnish, which has a variety of applications.

Such celluloid varnish is serviceable in various degrees of concentration. The thin varnish can be used for negatives, a thicker solution is a valuable cement for celluloid.

Then, again, it is possible to make very serviceable dark-room funnels for filtering, by bending a film into a conical shape and joining its edges with the cement.

Transparent rules may be made by casting from an engraved steel rule with a solution of celluloid; and it has its value also in mounting microscopic objects and as a lacquer.

The writer is a user of roll-film, as no doubt has been guessed, but the photographer who employs plates should find as many applications for the glass as have been here given for celluloid. —*Photography.*

Producing Canvas Effects on Prints

The application of an apparent canvas surface to photographic prints produces very striking results, particularly if the subjects themselves are fairly large and broad in theme. The method applies both to landscape and portrait subjects, but is not so suitable for pictures containing much fine detail. The procedure is to take a photograph in the camera of a plain piece of canvas, such as artists' canvas, or even a common piece of packing material which has been stretched taut so that there are no creases in the surface. The canvas

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should be lit strongly from one side so as to show up the grain or pattern distinctly. This canvas-grain negative should preferably be made on a film. It can then be interposed between the film of the portrait or landscape negative and the printing paper when making contact prints, and so give the canvas-grain effect to the finished print. If the canvas-grain negative is made on a glass plate it can be used in conjunction with the picture negative when making enlargements or may be used for contact work by giving a supplementary exposure to the negative after the exposure has been given for the picture from the first negative. The supplementary exposure may also be given in some cases when making enlargements.—*Amateur Photographer.*

Intensifying Without Mercury

Make a solution of 40 grains of potassium iodide in ½ ounce of water, then add 20 grains of iodine (crystals). This constitutes the stock solution. Take one part of this stock and dilute with one hundred parts of water. The negative, which has been well washed, is placed in this bath until it becomes entirely yellow—the image appearing darker yellow. Wash well for twenty minutes or so under the tap, then pour over the film the following solution:

Schlippe salt	18 gr.
Water	4 oz.
Caustic soda (10 per cent. solution)	3 drops

Pour on and off until the image takes on a deep brown color. Then thoroughly wash and dry. The intensity is considerable and the shadows clear. The iodine stock solution may be kept, provided the strength is maintained.—*Amateur Photographer.*

Some Notes on Copying

To ensure success when making camera copies of subjects either in line or half-tone, the questions of lighting, choice of plate, and suitable developer have an important bearing on the subject. Daylight at this time of year is very uncertain, but artificial light can be used advantageously for the purpose. Two lights should always be employed, one on either side of the subject, and screened from the lens with large pieces of white card bent round in a semicircle to ensure evenness of illumination.

The lights should be of equal strength and equidistant from the copy, or they may be moved about to give the best effect, for the avoidance of grain, or for lighting one part of the picture more strongly than another. An observation should always be taken from the view-point of the camera to see that there are no reflections thrown back into the lens. Two electric lights, incandescent gas burners, magnesium ribbon, oil lamps, or even candles may be employed. In the last-named case the exposure would, of course, be considerable, but excellent results can be obtained with an exposure of, say, five or six minutes, lens working at *f*/8, and using a medium rapid plate.

Toned Silver Prints, P. O. P., C. C., Carbon Prints, Bromoils, etc.

When the print is monochrome, *i. e.*, all *one* color, an ordinary rapid plate will generally give us all we need. But what the color is may make a surprising difference in the matter of exposure. For example, a red-purple P. O. P. will require considerably more than a blue-purple P. O. P. A quite light red-chalk carbon will require as much as a strong purple-brown carbon.

Color Contrasts

The copyist often desires to accentuate or subdue contrasts. For instance, he may wish to copy a pale sketch in water-color monochrome on white paper, and accentuate results, or he may be copying a black-and-white subject (*e. g.*, old engraving) which has ineradicable yellow stains in the paper that it is not desired to show. First, suppose we have a blue design on white paper. If we use an ordinary plate we shall find the blue and white come out approximately equal. If, however, we use a color-sensitive plate, and a screen which does not pass blue rays, the blue design might just as well be black, so far as the plate is concerned, but the white paper will still be affecting the plate with the red and green rays. Therefore we shall use a yellow filter passing red and green light.

Next take the case of white paper with yellow spots which it is not desired to show. If we used an ordinary plate we should find these yellow spots come nearly as dark as the black-ink parts. Now the yellow spots are reflecting red and green rays, the white paper red, green and blue rays, the ink no rays. We must, therefore, bring the rays from the white paper down to the level of the rays from the yellow spots. Here also we use a yellow screen.

Once again, suppose we are asked to copy some typewritten matter in blue-violet ink with red ink corrections.

The violet ink is presumably reflecting blue and red rays, chiefly the former, so that an ordinary plate should give the red ink as black, and the violet ink very pale.

The red ink reflects red rays only, the violet ink reflects red and blue rays, the white paper reflects red, blue, and green rays. To get our white paper we must, therefore, rely on green rays only, so that the red inks may act as black ink would; *i. e.*, a green filter and panchromatic plate are required in this case.

But suppose we do not want the red ink corrections to show, what then? Here we must rely on red rays to give us the white paper, so that the red ink and white paper may be equal so far as the plate is concerned.—*Amateur Photographer.*

A Copying Hint

There is hardly a subject, not excluding black and white, which cannot be more truthfully rendered by the use of an orthochromatic screen and a color screen. We were reminded of this fact by seeing a friend attempting to copy a worked-up bromide print which had

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a rather pink tint in places. Although what would be termed a good negative was obtained on an ordinary plate, the light values were manifestly wrong. We suggested using an othochromatic plate. As it happened, some slow orthochromatic plates and a screen of the sort designated by Dr. Mees as "brown"—that is to say, one of the old pot-metal ones—were at hand, and even with them the result was entirely satisfactory. In this instance the original difficulty was due to an almost invisible addition of color to the white pigment used for working up, which rendered it much less actinic; but in other cases the orthochromatic method helps by cutting off invisible actinic reflections from the surface of the original.—*British Journal of Photography.*

Marking Negatives as a Guide for Trimming

In probably most studios the work of trimming and mounting is done by semiskilled labor, or even by young girls with practically no idea of correct trimming or placing of the figure in the print. In the old days of print-out papers each print was carefully "filled" by the printer, besides which the now obsolete cutting shape was much better adapted for correct placing than the modern desk-trimmer, which is by no means an easy instrument for an inexperienced person to work, even when the requirements are fully understood.

For this reason it is advisable for the negative to be marked so that the prints can be trimmed almost automatically. This marking can best be done by the retoucher, who can have a set of cardboard or metal masks, with openings just the least bit larger than the finished sizes of prints. The mask is held against the film side of the negative, which is moved till the correct view is seen. This should always be judged with the glass side toward the observer, and a light mark then made with a soft pencil around the opening. This mark will give a guide on every print, and the trimmer needs only to just cut off the white line to have each print correctly filled.

It is but the work of a moment for the retoucher, who is generally the person, next to the operator himself, most capable of marking the plates correctly, while this procedure will save a good deal of time both in the printing and mounting rooms. Only four cuts per print will be required instead of a lot of slicing off here and there till the print looks about right to the untrained eye of the assistant.—*British Journal of Photography.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. A. F. Kellog. 1162240.
M. P. Camera. C. van Deventer. 1162419.
Printing camera. J. Trimbach. 1162666.
M. P. projector. F. H. Wunderlich. 1162430.
Natural color M. P. P. Ulysse, 1161910.
Microscope apparatus. Cornell & Davidson. 1161848.
Plate pack. M. Niell. 1162385.
M. P. printer. A. S. Howell. 14023 (reissue).
M. P. machine. J. G. Clemens. 1162037.
Printing plates. M. K. Hatt. 1162162.
M. P. camera. T. E. C. Wheeler. 1163493.
Photo-engraving camera. Walsh & Reed. 1162956.
Color photography. C. L. A. Brasseur. 1163207.
M. P. film renovator. J. W. Schab. 1162812.
M. P. sprocket wheel. A. A. Reising. 1163557
Exposure device. J. S. Kaufman. 1164526.
Stereo-cinematograph. E. Cervenka. 1163892.
Making M. P. C. A. Birchfield. 1164252.
M. P. apparatus. C. F. Jenkins. 1163757.
Synchronous sound and M. P. D. O. Royster. 1164401.
Kodak M. P. J. E. Welch. 1164321.
Stereo *x*-ray. Snook & Kelly. 1163959.
Camera A. F. Kellog. 1165181.
Camera. O. E. Romare. 1165129.
Kinetographic apparatus. Pietzech & Nicholls. 1164859.
Film reel. C. T. Duffey. 1164999.
Framer for M. P. J. T. Wells. 1164147.
Projector. M. M. Gilliam. 1164937.
M. P. Machine. J. T. Wells. 1165146.
Printing frame. H. Fagerland. 1165237.
Projecting *x*-ray images. G. Bucky. 1164987.
X-ray tube. Snook & White. 1165138.
Focussing device. J. E. Woodbury. 1166032.
Multiple exposure attachment. C. K. Pugh. 1165710.
Cinematograph apparatus. L. Kamm. 1165513.
Film-feeding mechanism. E. Schneider. 1165629.
Flashlight. F. C. Schofield. 1166265.
Color print. W. F. Fox. 1166121, 1166122, 1166123.
Plate magazine. G. C. Beuhn. 1166353.
Picture display machine. Partridge & Hummel. 1166384.
Projector. W. F. Fox. 1166120.
Camera. J. E. Krost. 1166914.
Camera. Gregory & Carkhuff. 1167356.
Repeating camera. J. N. Johnson. 1166763.
Amplifying finder. E. B. Smith. 1167319.
Cinematograph display apparatus. V. Mansfield. 1166701.
Film-driving device. L. Gaumont. 1166453.
X-ray plate holder. G. H. White. 1166797.
Shutter. A. R. McPhee. 1166921.
Automatic camera. G. N. Pifer. 1167314.
Picture screen. A. Wright. 1166569.
Pneumatic printing frame. E. W. Sweigard. 1166945.
Sensitized film for process printing. L. A. Orans. 1166540.

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OVER THE COUNTER

HELPFUL AND SUCCESSFUL METHODS

By A. H. BEARDSLEY

PUT STICKERS ON YOUR GOODS

WE strongly advocate placing a neat sticker on all photographic supplies where such advertising may suitably appear. There are many customers who will buy a film and return it for developing and printing to the firm whose neat sticker appears upon the box. This also holds good as regards chemicals, papers, and other supplies. However, see to it that your sticker gives your address. Here is one we saw the other day:

BLANK AND COMPANY
EXPERT DEVELOPING AND PRINTING
LET US ENLARGE YOUR PICTURES
WE ARE HEADQUARTERS FOR LENSES,
CAMERAS, PLATES, FILMS, CHEMICALS.
YOUR ORDERS WILL RECEIVE OUR BEST
ATTENTION

Where is "Blank and Company" located? We would like to send in an order.

No doubt the man responsible for the above sticker had in mind the fact that his firm was well known locally. He lost sight of the fact that modern transportation brings one city or town in close contact with another, and that a good local reputation may be easily made into a good state or national reputation.

A good sticker is one which has in addition to the name, address, and advertising a small section for marking the price of the article. Upon receipt of goods each item in the shipment should receive its sticker with the price clearly marked. Goods so marked are then sold at the correct price and at the same time carry an advertising message. This form of publicity is both cheap and efficient.

SELLING LENSES

WE remember the first lens we sold. That was some years ago; and to tell the truth, we are not over anxious to meet the customer today unless we see him first. The original transaction was after the following order. The customer called at the store early one morning and said he wished to buy a good anastigmat lens for his 3A kodak. We were glad to hear of his requirements but how we were to sell and explain an anastigmat lens was beyond us. The first question he asked was regarding the best focal length. Someone had told him that a 6-inch was better than a 6½-inch lens for a 3¼ x 5½ camera. He asked us point blank what we thought about it. It was immaterial to us which focal length to advise. As far as we knew one was good as the other. To be definite, we told him we thought a 6-inch was the better of the two. We were greatly relieved when he accepted our advice. However, his next question was a complete photographic knock out. He asked what was meant by the mark F6.8 and F6.3 on a lens and also what the difference was between these two figures. We were blessed if we knew. However, something must be done or the sale would be lost and we would get a good call down from our department head. We started, and our explanation would have made lens makers turn blue in the face. We cannot remember all that we said but some of the striking points of our exposition are worth preservation. The mark F6.8, according to our best knowledge and belief, was a peculiar sort of trademark which anastigmat lens makers employed to distinguish their own lenses from those of a cheaper and less satisfactory type. Just what the F signified was a puzzle. However, we took a chance and explained that the F in the expression F6.8 stood for "fast." We had heard somewhere that an anastigmat was a "fast lens." In regard to the difference between F6.8 and F6.3 we stated that the faster the lens the larger the numbers. In short, F6.8 was faster than F6.3 because F6.8 was a larger number. Strange to say, we got away with it, and our cutomer brought an F6.8 anastigmat lens of 6-inch focus for his 3A kodak.

The above anecdote may sound absurd. It does to us now; but on the day that that sale was made there was positively nothing absurd about it. We did our best with the meagre knowledge we had at the time. Hundreds of photo assistants all over the country are but little better off as regards accurate lens sales talk. In every large photo supply house there is usually one "lens man." What happens when he is out to lunch or away on business? Just another farcial attempt by an untrained assistant to sell something concerning which he knows practically nothing. This sort of thing hurts. The photo assistant knows he is in hot water, the customer may or may not get the right lens; and, if he does not, the firm, not the photo assistant, loses a customer.

This problem is of vital importance to the photo assistant and to the firm that employs him. The only solution is active coöperation between assistant and the firm. By coöperation we mean a willingness on the part of both to exchange and obtain all possible accurate information concerning lenses. Also, the photo

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assistant should be given ample opportunity to take pictures and thus obtain a working knowledge of the article he is trying to sell. Reading alone will not and cannot make a good lens salesman.

The ambitious photo assistant must show his active interest by obtaining lens catalogues from every manufacturer in the business, by handling and studying lenses and by taking pictures himself. He should read books on lenses and request his firm to get them for him to read. The advertising pages of every photographic magazine carry the names of excellent books on the subject. In the best interests of photo assistants and photo supply houses throughout the country, we say—DO IT NOW.

GIVE PLENTY OF TIME FOR SPECIAL WORK

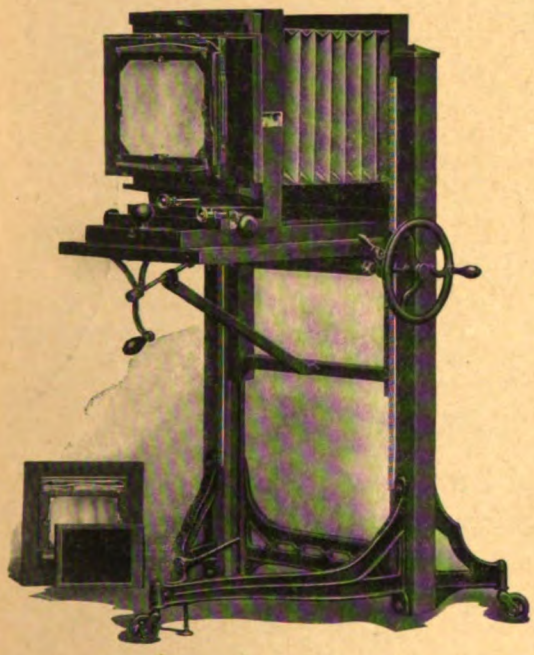
WE have received the request from a well-known manufacturer to call our reader's attention to a very important factor in the relation between dealer and manufacturer. When you receive a special job of any kind which must be done at the factory of the manufacturer of the article in question, allow more than enough time. If necessary give your customer a promise date two days later than the factory promise given you. By doing this you will avoid trouble for yourself and disappointment on the part of the customer. A case in point. An order was received on Wednesday preceding New Year's day with the emphatic stipulation that the finished article must be at its destination on Wednesday of the following week. The order was based on the manufacturer's previous assurance that delivery could be made in one week of working days after receipt of order. The dealer lost sight of the manufacturer's specific statement, "in one week of working days." The order was received late Wednesday afternoon. One day gone. Thursday the job was started, two days gone. Friday further progress was made, three days gone. Saturday was a holiday, four days gone. Sunday no work was done, five days gone. Monday work was resumed, six days gone. Tuesday work continued. One week up and there still remained three days' work to be done in addition to one day required for transportation. The result was unpleasantness all around which could have easily been avoided by careful attention to the time given by the manufacture, the calendar, and two days' leeway to the customer. Remember, special work, which cannot be included in the regular routine of fagtory work, is subject to all manner of delays over which the manufacturer has no control. A simple job, as the dealer sees it, may require sending a long distance for a given part which, if on hand, would have required only a few hours' work. A delay of two weeks may occur on just such a so-called simple job; and, in justice to the manufacturer, let it be understood that he is not always to blame. In order to insure the best service to the customer, the dealer and manufacturer must coöperate. To coöperate to the best advantage demands a liberal allowance of time on the dealer's part and a determined effort on the part of the manufacturer to make the dealer's promise to the customer a sure thing each and every time. Bear this in mind the next time your "fussy" customer drops in and wishes his camera turned inside out or fitted with a periscope.

DUST YOUR SHOW CASES INSIDE AND OUT

THERE is probably no one thing which will impress a prospective customer more unfavorably than a dusty, messy-looking show case. It is bad as regards the customer, the efficiency of the store management, and the goods. The almost universal use of black leather bellows makes a thorough dusting of your show case once a day a positive necessity. Albums, specialties, and pictures quickly show neglect. In fact, all goods should receive attention every morning. The show case is especially important since it is the first object which a customer inspects in detail. The Riker drug stores realize the sales-pulling power of their show cases and in consequence you rarely see one which is not clean, well arranged, and interesting. No matter how small or unassuming your show case may be, have it clean. The public will overlook the meagre display far quicker than they will dust and dirt. Once a week every article in the case should be removed and the glass and shelving cleaned with Bon Ami or any other good cleaner which will make the glass clean and bright. Then each article should be thoroughly wiped and dusted before being returned to the case. A camel-hair brush is excellent for use on cameras in order to reach all parts without danger of scratching. As the goods are returned to the show case they should be neatly arranged so as to show to the best advantage. Things of a kind should be grouped as much as possible and suitable price tags placed where the customer will have no difficulty in reading the price. Every morning the case should be dusted and also any goods in the case which do not look fresh and clean. We all know that these things should be done in every well-appointed store and studio, but some of us do not practice that which we know to be good. Let's turn over a new leaf and have things attractive.

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Century Studio Outfit No. 7



$74.00

THIS OUTFIT takes double Plate or Portrait Film Holders, and the sliding carriage registers for one or two exposures on either the 8 x 10 or 5 x 7 plate.

Here is what the price includes:

1—8 x 10 Century Portrait Camera No. 2
1—No. 1 Semi-Centennial Stand
1—Sliding Ground Glass Carriage
1—8 x 10 Double Plate or Portrait Film Holder
1—5 x 7 Double Plate or Portrait Film Holder
1—8 x 10—5 x 7 Adapter Back

CENTURY CAMERA DIVISION
EASTMAN KODAK COMPANY
ROCHESTER, N. Y.

WILLIAM J DORNAN, PRINTER, PHILA.

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The man who uses

ARTURA

Expects, *and receives* the most in quality that has ever been produced in a developing-out paper.



All Dealers'.

ARTURA DIVISION,
EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

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15 CENTS A COPY

FOUNDED 1864

$1.50 A YEAR

THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII MARCH, 1916 NUMBER 3



EDWARD L. WILSON COMPANY, INC.
122 E. TWENTY-FIFTH ST. NEW YORK

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THE OLDEST PHOTOGRAPHIC MAGAZINE IN AMERICA

"There's nothing quite like it"

is the invariable reply when one is asked to name another photographic paper resembling

Cyko

The stereoscopic effect, the tone gradation, the life, the texture, and with it all the simplicity with which it produces the best results from any negative, give it a distinctive place in photography.

A CYKO print is recognized at once, whether produced on

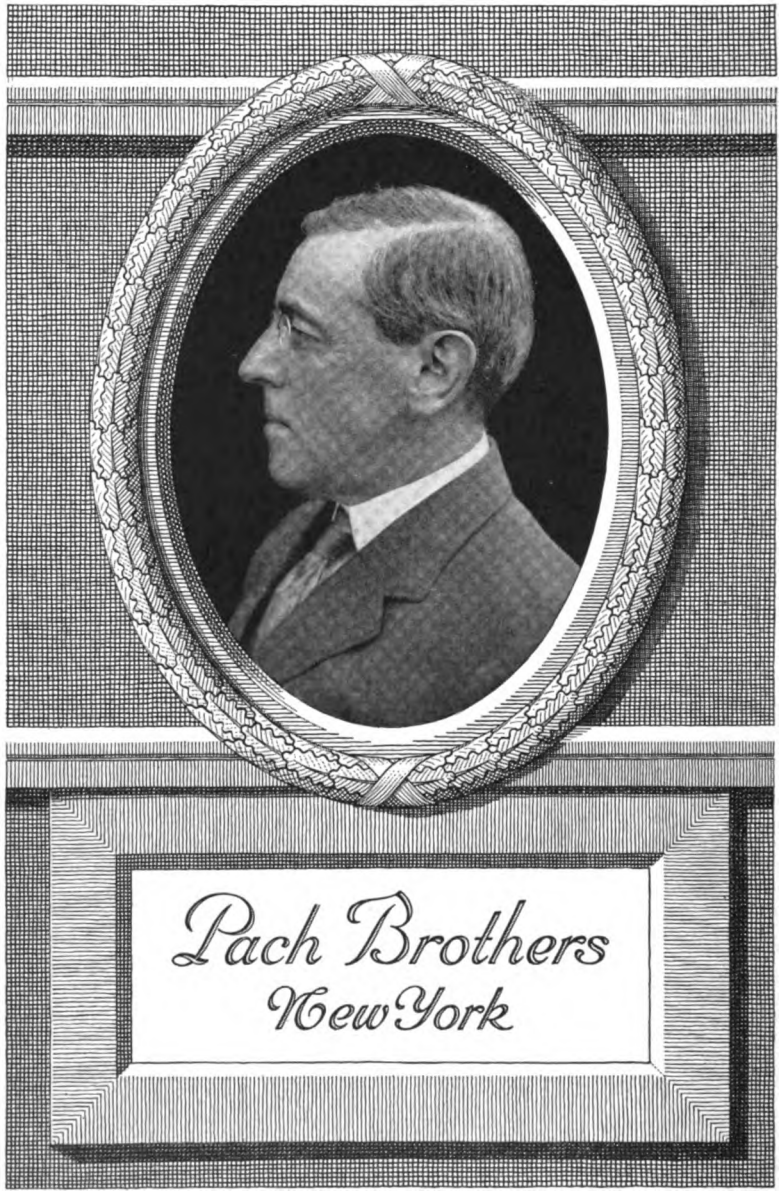
Professional Cyko
Normal Cyko
Contrast Cyko
Soft Cyko
or
Enlarging Cyko

The professional photographer knows it, the amateur finisher admits it, and the amateur and the general public will not accept any substitute for a CYKO print.

Ansco Company
Binghamton, N. Y.

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A FOLDER COVER DESIGNED BY THE SCHRELL-PIERSON STUDIO, NEW YORK, FOR PACH BROTHERS. THERE IS SOMETHING IN THIS ILLUSTRATION THAT INSPIRES CONFIDENCE IN THE HOUSE IT ADVERTISES IT SUGGESTS QUALITY OF WHICH DIGNITY IS A COMPONENT PART.—COURTESY "PRINTING ART"

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The
PHOTOGRAPHIC
JOURNAL
of AMERICA

VOLUME LIII MARCH, 1916 NUMBER 3

PHOTOGRAPHY IN ADVERTISING

By J. CLYDE WILSON

A DOUBLE-PAGE advertisement in our greatest national weekly costs over $10,000. That is a great deal of money to put into an advertisement, considering that it pays for but a single insertion. Profitably invested, in real estate say, it might support one in comparative comfort all his days. On the other hand, it is usually an investment which pays for itself many times over. Though there are no figures to satisfy our curiosity on this point, because this kind of advertising is usually only one factor in a great campaign, still we know that such campaigns if judicially planned usually pay. It stands to reason that the privilege of addressing over 2,000,000 people under such favorable auspices cannot be without advantage, for if only one-half of 1 per cent. of that number responded in a very small way the cost would easily be taken care of and the advertisement would have created an interest sufficiently great as to result ultimately in more extended sales. Its total value as a selling force it is impossible to estimate.

This curious intangibility, as I may call it, is characteristic of the whole process of advertising. It cannot be resolved into a formula. It is really an art. Though it serves the prosaic needs of business, its appeal is actually very subtle and hardly understood by most people. To sell goods one would think that it was only necessary to convince the prospect that the goods were right; but as a matter of fact, if we were to buy all the goods of whose merit we were convinced, we should soon go bankrupt. Our limited means forces us to a careful selection, and in making this choice our whims and fancies play an exceedingly important part. So in advertising, the advertiser must not only convince us of the quality of his goods, but he must also create in us a more or

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FIG. 1

less definite need for them—stimulate our desire to possess them. For the reasons here cited such an appeal cannot always be directed to our reason, but is more than likely to find fallow ground when aimed at our sympathies. For instance, a man of family may be greatly in need of a new overcoat and his judgment may counsel him to purchase one before the cold weather sets in. On the other hand, his taste for good music and his desire to furnish his family with every means of enjoyment may lead him to purchase a phonograph instead. Perhaps he had been contemplating such a thing for a long time and was secretly relishing the boisterous good time and keen enjoyment his pleasant surprise would create. In his case an appeal to reason would hardly have succeeded in selling him the phonograph (and it might have produced just the opposite result), but an imaginative appeal touching his emotions and playing upon his sympathies would be much more likely to turn the scale. If you will call to mind some recent phonograph advertising you will observe that some such method of approach has actually been employed.

Because of the diversified nature of its appeal, advertising is able to make excellent use of illustration. The reason is not hard to discover. Pictures speak a universal language, and, making their appeal primarily to the senses as they do, they often touch the imagination in a surprising way. To revert to our phonograph illustration, you will recall that one of the advertisements recently run in the magazines pictured a party of young people gathered of a summer evening upon the spacious veranda of a summer cottage. In a conspicuous corner a phonograph discoursed sweet strains, to which the young people were dancing. As you looked upon this scene, so full of life and action, you unconsciously perhaps absorbed its atmosphere till you became as it were a part of the scene itself, and actually experienced some of the thrill of those in it. No words could compete with such a picture in arousing our desire for a phonograph, and no appeal to reason pure and simple could awaken

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THE EASTMAN COMPANY HAS ALWAYS USED HUMAN INTEREST IN KODAK ADVERTISING—MOST EASTMAN ILLUSTRATIONS ARE GOOD BECAUSE THEY HAVE A SLIGHT DRAMATIC ELEMENT

within us that sense of pleasure which so often holds us in captivity and leads us to act in direct opposition to our reason.

This somewhat lengthy introduction seems necessary to a satisfactory interpretation of the spirit and purpose of illustration in advertising. Though not quite all advertisements are illustrated nowadays, the vast majority of them are, and it is interesting to the photographer to observe that there is an ever increasing use of photographs for this purpose. There is, I think, a very profound reason for this. Photographs transcribe life as it actually is, and so they are at once interesting and convincing. Granting that a drawing has more plasticity, in making it possible to put characters into every conceivable kind of action, still a photograph when well-handled can do as much (as the "movies" have shown us) and in a way which better satisfies our sense of reality. There is another interesting fact about the use of photographs—and I am thinking especially of the use of human figures in advertising—and that is our instinctive interest in our fellow-man. They say man's most interesting study is man himself, and so we never grow tired of studying photographs of people. It matters little that they are strangers to us—they are strangers only in name and individuality—in their main characteristics they are just a reflection of ourselves. For this reason a photograph of a girl wearing a sweater or a set of furs on a page will invariably arrest our attention, where a drawing would have to depend for that result upon its merit or attractiveness.

The uses for photographs in advertising are growing constantly in number. If you will glance through the advertising pages of any popular magazine you will see them used to illustrate almost every line of business. But their use in this connection is but one of a multitude of opportunities which are

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"We are advertised by our loving friends"



Well started in life by the Mellin's Food Method of Milk Modification

AN AFFECTIVE USE OF PHOTOGRAPHY IN ADVERTISING

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THIS IS THE OLD CONVENTIONAL METHOD AND SHOULD BE AVOIDED

afforded an enterprising photographer. Periodical publicity is only one form of advertising. We have, in addition, the preparation of booklets, folders, window-displays, matter for house-organs (manufacturers' magazines), lantern slides, transparencies, catalogues, calendars, and novelties. The large manufacturer is the most valued user of this kind of work, because his advertising is usually undertaken in a scientific way which promises results and makes the photographer's effort appreciated. Such customers are highly desirable, because they have the means to pay for painstaking effort, and no other kind is really worth while.

Advertising photography is by no means an indifferent task for an idle day. I know of nothing in the whole range of photography which will further try a photographer's skill—and I know of nothing more fascinating. It will not do to call in the town beauty, all swelled up with her new importance and rigged out in the season's finest, and expect to accomplish much. It is easy enough to get that pompous individual to hold up a can of sardines (with a long grin which threatens at any moment to break into a giggle, the whole performance seems so ridiculous to her), and to take a snap of her, but such pictures never command any price on the market. A good advertising photograph is in. variably built around an idea, and in Fig. 1 (Johnstone's Chocolates) we have a splendid instance of this. "Rival Sweets," the title is, and the idea is obvious. In nearly all of these advertisements of the Johnston company the same girl is used and the illustrations are treated somewhat alike. That is to say, a black background is most generally used, and the girl is dressed daintily in white. This produces a strong display by virtue of the contrast thus provided. The black also forms an excellent background for the advertising caption. The result is one which will easily dominate a page, a most desirable virtue. You will observe that the advertising appeal is made entirely by suggestion. The lady impresses one as being of a refined and discriminating type and we are led to sympathize with her choice, because we rather approve of her. It is a subtle appeal, but likely to reach the kind of buyers who can spend the amount asked upon sweets.

In the advertisement of Occident Flour, we have another successful treatment of the photograph. This is the advertisement of a large advertiser, and the principal purpose of this advertising is to keep the name of the flour

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and the design of the bag in which it comes constantly before the public. It is a high-grade product, somewhat expensive, and every effort is made to give it a sort of commanding importance. There is no argument or explanatory matter and only a slogan. These advertisements are usually run in large space, often in more than one color, and the idea of the display is to attract attention by its simplicity and attractiveness and to impress the name in the public consciousness. This particular example is interesting to the photographer because of its artistic excellence and the gracefulness of the pose. Every detail of dress harmonizes with the swing of the lines and the charm and ease of the model commands admiration. Such work is only possible with the assistance of good professional models.

Good models are not easy to get. Beauty is of course highly desirable in a feminine model, but so also is grace and intelligence. The most willing young woman who cannot combine something of these three requisites must fail in this work. Beauty cannot be acquired, but grace and intelligence may sometimes be cultivated (though a rather hopeless undertaking), but when one finds the alert mind coupled naturally with these other desirable characteristics in one individual, he is likely to have the promise of a good model. To pose successfully also requires some talent for acting, for the model really enacts a character. Actresses themselves make excellent models, but they are not to be obtained for this work except in the large producing centres, and they expect a great deal for their services. Good models sometimes turn up in unexpected ways and places, and one should ever be on the alert for them. The portrait photographer usually keeps a few promising names on file, and a little study will show where these can be made useful.

The prices paid models differ in different places. In the smaller places it depends upon the best bargain the photographer can make, but in the larger cities the models have more or less fixed charges depending upon their skill and the demand in which they are held. These prices range from fifty cents to two dollars per hour, and sometimes they exact an extra charge of from fifteen to twenty dollars for the release of an important picture.

This matter of release is a highly important one. No model should be engaged who is unwilling to sign a form of release which allows the publication of her picture for the uses intended. Very often her picture will become part of a firm's trade-mark, and it is highly inconvenient to have to contest a lawsuit on this account when elaborate preparations have been made for its use. This form must be as broad as possible. Awhile ago a model protested against the use of her picture on the billboards, although a release had been granted for its use in the magazines. It is well to cover every possible contingency in this connection. A good form of release is the following:

I hereby acknowledge that the picture of myself (description of the pose here) accompanying this form has been seen by me, and that in consideration of the sum of $, I hereby grant (photographer) the ownership of it with the privilege of selling the same for advertising purposes, to be used in any kind of advertising he may see fit or its purchasers may see fit, not otherwise prohibited in this agreement. It is especially understood that the same will not be used in whole or in part in any obscene or unlawful way, nor be altered to produce such a result.

Signed ———————— (model).

Signed ———————— (photographer).

Witness———————— Date———

A duplicate of this form should go to the model. This is of course merely a suggestive form. They are sometimes more elaborate and specific and sometimes less so.

A phase of advertising which is receiving increasing attention is the matter of window displays. It is a part of the manufacturer's problem to reach the consumer whom he does not sell directly, and one of his ways of doing this is by advertising through the dealer. Very ornate matter is being put out by the manufacturers in this interest in the way of window displays, but unfortunately for them only a very small part of it ever gets into the dealers' windows. One of the reasons for this is that it is too cheap in appearance.

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The dealer takes a just pride in his windows, and the better dealer he is the more thoughtful is he of his window trims. A great opportunity awaits the photographer here. The field has barely been scratched. Enlargements mounted upon wall-board and cut out on the outlines of the figures in them, make very attractive windows. Royal sepias in color, properly framed, bear unusual chances of being given space and attracting the passerby, and it but remains for some enterprising photographer to carry the idea to some progressive manufacturer to get an interested hearing.

Transparencies, well made, are extremly good advertising in a window at night, especially when backed with a hy-lo electric bulb, which makes an alternate strong and weak light—a certain means of attracting the passerby.

Framed photographs, 10 x 12 and larger, using plain black or white backgrounds, simple in get-up and bearing some interesting phrase or catch-word to hitch-up with the picture, are already being used for window display purposes. These could probably be made up in a variety of stock designs and sold directly to the dealers if they bore some slogan appropriate to the store. For instance, a picture of a girl fondly stroking her pet cat with apparent kindness, and bearing the caption: "We Treat You Well Here," ought to sell. This is a somewhat crude instance, resurrected on the spur of the moment, but it serves to convey the idea.

To secure good black backgrounds for this purpose, it is well to cut away the film on the negative. For the lettering secure some film-support from the Eastman Company. This is a very thin film which can be placed between the negative and the print during the printing and permits you to letter your negative without having to print the letters backward, by the simple device of lettering forward on the film support and reversing it when putting it in place over the negative. If you are not handy at printing, the caption may be printed by a printer, using very thick ink (book-cover ink, I believe they call it) and in dusting powdered lamp-black before the ink has set to increase the opacity. A sign-writer can also do the work with Alvord's opaque if careful. Either way makes a professional job that is superior to any amateurish efforts one might make himself.



PEBECO ADVERTISES PRETTY TEETH ("CLOSE-UP"). WHILE IT IS POSSIBLE TO RUN A PICTURE OF A TUBE OF PASTE, THERE IS NO WAY TO ILLUSTRATE THE PASTE ITSELF—EXCEPT IN ITS RESULT.

If one is handy with the air-brush, advertising illustrations can often be worked up and much improved by this process, making them much more salable. Most of this work goes through the hands of the half-tone retoucher anyway, before being made into cuts, and as his job is simply to paint up the photograph to emphasize desirable points and subdue others, the photographer can learn to do this himself. It must be remembered, however, that this is a very exacting business, requiring much experience, and not to be undertaken seriously by a novice.

It is worth noting that large pictures

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will have a readier sale than small ones, all things considered. The run of photographs is not usually large, and for that reason a very large picture has an increased impressiveness, which a small



SAVAGE AUTOMATIC REVOLVER PHOTO-PICTURES ARE MORE LIKE THE "MOVIES" THAN ANY OTHER ADVERTISING ILLUSTRATIONS. THIS PICTURE HAS MORE STOPPING POWER THAN THE STORY ILLUSTRATIONS OF MOST OF THE MAGAZINES IN WHICH IT APPEARED.

one of the same subject could not possess. 11 x 14, 14 x 17, or 16 x 20 plate size prints will command instant attention.

Advertising agencies, because they are usually entrusted with the handling of the details of most manufacturers' advertising, are extensive users of photographs. These men are well informed upon every detail of their craft, as a rule, so it will not do to try to "pull a bluff" with them, as the slang goes. You will be detected at once. You may find, in fact, that they know almost as much about photography as you do, and know at once a good picture from a bad one. On the other hand, they appreciate good work and can use a lot of it. They should form your chief market for advertising photographs.

There seems to be no standard of prices in this work. It is a question of what you can get. Some firms would consider ten dollars for a picture an excessive price, while those who know of the difficulties involved in securing really satisfactory results are inclined to be more liberal. Most advertising men are open to reason and will consider justly a reasonable argument for a price which will pay you. They are not stingy, but they are constantly on guard against being duped. Some firms, who have known exactly what they were after, have paid over one hundred dollars for a single photograph, apportioned in several payments, made after different trials which did not pan out to their satisfaction. Usually those who know the most about photography are willing to pay the best prices. Such a price is really not excessive when it is realized that the most mediocre pen-drawing for a similar purpose would cost not less than twenty-five dollars, and the price would be more likely to be fifty dollars. Sometimes a definite charge is made for each proof submitted, and a larger lump sum asked for the one selected. This is a safeguard against endless sittings to try and please. As a rule, however, a definite sum is paid for the picture selected, sufficiently large to cover the cost of those rejected. If the pictures are for house-organ use, where there will be a more or less constant demand from month to month, one can afford to make them cheaper, for the demands will not be so exacting. Ten or twelve dollars should be enough. On the other hand, when the advertising manager comes to you for something "nifty" for the cover of his new catalogue, he expects you to spread yourself and do your best. If the result is a real "humdinger," charge him well for it. He may whistle at your price, but if he likes it he will pay it.

When all is said and done this is a most attractive field for the skilled photographer, but he will need to ground himself in the essentials of advertising to get a royal welcome. As yet it is hazardous as an independent business, but as a side line it offers the photographer an introduction to a larger market, gets him in touch with large business, and if he does commercial work will vastly extend his opportunities. In any event it is interesting work, likely to broaden his vision and increase his skill.

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SPEED AND GRADATION OF BROMIDE PAPERS—CONTACT PRINTING AND OPACITY MEASURING

By ANKETELL HENDERSON, M.C.E.

At the conclusion of my previous paper[1] I stated that you do not need to measure for every enlargement, and that you soon get to appreciate the value of the tones. In this paper dealing with opacities I give the same advice. Measure until your eye gets to appreciate the value of the various opacities, and you then need only measure at the commencement of a batch of work, or for unusual negatives.

The professional photographer who daily exposes dozens of plates and bromides acquires almost an *instinct* as to correct exposure, and further secures uniformity of material by wholesale buying of material. The amateur, on the other hand, works at intervals and he tries different plates and papers to vary his effects. A few correct measurements at the beginning of a new batch of work revives what *instinct* he has acquired, and saves worry and expense, and the eye becomes trained to estimate light intensities and opacities accurately enough for average cases.

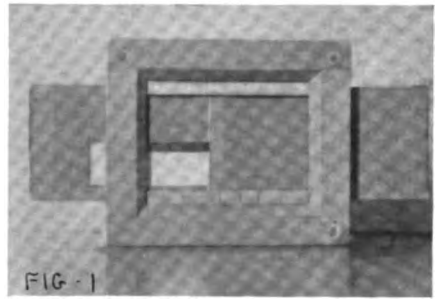
When a sensitive paper or plate is exposed to gradually increasing exposures it is important to measure two points:

1. The exposure at which definite light action commences, which I call the inertness.

2. The exposure at which an increase of exposure ceases to give increase of action, which is called the maximum black.

1 indicates the sensitiveness of the paper or plate, and the proportion between 1 and 2 is called the gradation. Similarly the proportion between the minimum opacity of the negative and the maximum opacity is called the gradation of the negative. It is obvious that to ensure certainty in bromide printing the gradation of the paper should as nearly as possible coincide with that of the negative. More failures result from the absence of this coincidence than from wrong exposures.

In my previous paper on exposures for bromide enlargements, I showed a simple method of obtaining the point at which definite action commences, by giving successive exposures at a given distance from a candle, and advised a distance of $1\frac{1}{2}$ on a scale of inverse squares (which has 1 foot as unit) and



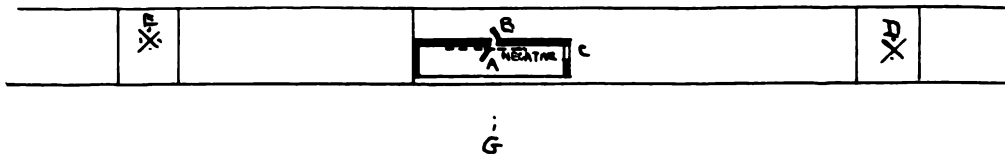
successive exposures of 2, 4, 6, 8, 10 and 12 seconds, which should produce $\frac{1}{6}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{5}{6}$, and 1 unit exposures. By making these exposures upon half of the test paper, and repeating the 2, 4, 6, 8, 10, and 12 exposures on the other half, with the candle at unit distance (1 foot) we obtain 2, 4, 6, 8, 10, and 12 unit exposures, and by means of this can arrive at the maximum black and so obtain the gradation of most papers now on the market. For instance, an inertness of $\frac{1}{3}$ and a maximum black of 8 gives a gradation of 24.

If the paper is of too long gradation it is best at the unit or foot distance to increase the first exposure to 8 seconds, and so make a series of 8, 10, 12, 14,

[1] P. J. of A., January, 1916.

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FIG. 5



16, and 18. I have never had to exceed this limit. As the gradations of the negatives now being made are shorter than they used to be it appears as if shorter gradation papers are being made. Further, the slower the paper the shorter, as a rule, is the gradation.

A correct relation of gradation paper to negative is also necessary in enlarging, but owing to the fact that there is a scattering of the light which passes through the higher opacities of the negative the effective gradation of the negative when being enlarged is increased. This increase varies in different emulsions, averaging in my opinion about 50 per cent. However, I have found that with some lenses the increase, owing probably to air space, is less than with others, and these lenses are useful in dealing with old-fashioned negatives of greater opacity.

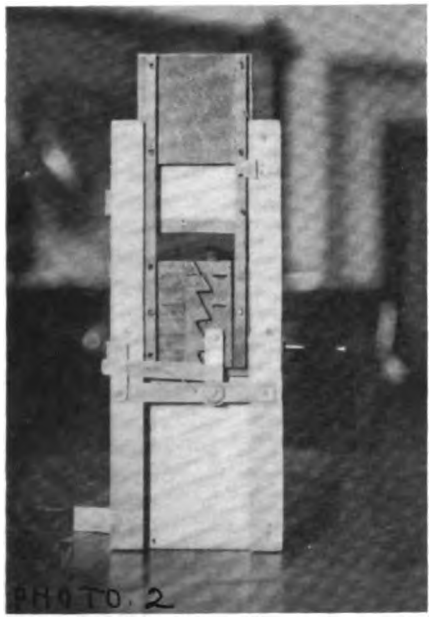
In my former paper I described how to make a printing frame into a rough dark slide by fixing two strips of cardboard about $\frac{1}{2}$ inch wide and about $\frac{1}{16}$ inch thick along the two sides of the frame, and on these, two $\frac{1}{4}$ inch strips of the same thickness, upon the latter of which the glass to carry the test paper rests. Instead of using a card between these strips as a shutter as previously described, cut a strip of stout black paper, as per sketch (Fig. 1), with opening as per sketch. By sliding the opening along $\frac{1}{2}$ an inch at a time at $\frac{1}{12}$ unit measurement, and then reversing the strip in the dark, and repeating the operation at 1 unit distance the speed and gradation can be measured accurately, but equality in width of strips is difficult to obtain.

A modification of the drop shutter shown in Fig. 2 will give this equality of width, and with the shutter weighted a quicker movement than is possible by hand, and by having a card to slide at each side of the opening, each card covering half the opening of the shutter, the sensitive paper can be protected while resetting the shutter. Unfortunately it is difficult to drop the shutter at intervals which include half seconds, and if a mistake is made the work has to be started again. This instrument is useful for testing gaslight papers.

For this reason a sector wheel with openings calculated for the convenient fractional speeds was made, and it was easy to add apertures for $\frac{1}{8}$ and $\frac{1}{4}$ units, making a complete scale of $\frac{1}{8}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{5}{6}$, and 1 at the $\frac{1}{12}$ unit distance, and $1\frac{1}{2}$, 2, 3, 4, 6, 8, 10, and 12 at the unit distance. The angle of maximum opening in the sector being 190 degrees a revolution for 24 seconds is necessary to give 12 seconds maximum exposure, but for papers of long gradation the exposure at unit distance can be lengthened to 36 seconds (equal to 18 seconds maximum exposure), and 50 per cent. added to each of the resulting figures. The angles of the openings in the sector wheel are $22\frac{1}{2}$, 30, 45, 60, 90, 120, and 150, 180, the four latter being partly on one side, and partly on the other side of the centre of the wheel. The wheel was carefully cut out of stout Bristol board, and blackened and mounted on a spindle in front of a board which was cut to hold the dark slide as close to the sector wheel as possible. A pulley $3\frac{1}{2}$ inches diameter, by means of a belt, drives another pulley $1\frac{1}{2}$ inches diameter on the spindle as that of a synchronous revolution of the sector wheel and the hand is avoided (for the hand is quicker on the down stroke), and the large pulley is given as nearly as possible one revolution per second. Front and back views of this simple apparatus are shown in Figs. 3 and 4.

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The dark slide is made of tin with a wooden back, and has two openings in front, each $2\frac{7}{8} \times \frac{7}{8}$ with $\frac{5}{16}$ space between. Each opening has a separate slide, one of which is drawn vertically upward with one hand while the other



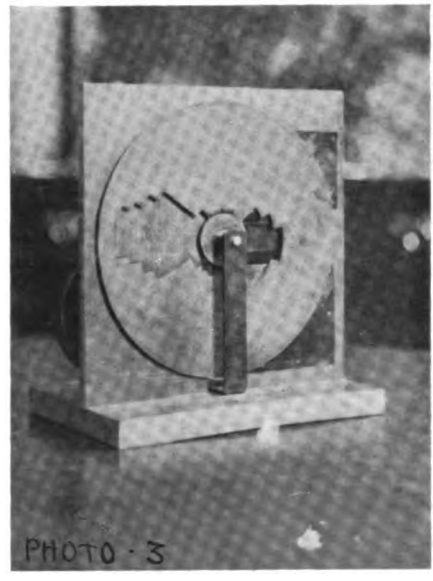
hand turns the pulley, and it is easy to move the candle between the $\frac{1}{12}$ and unit distance, and reverse the dark slide, and make the two measurements (of 24 seconds each) in a fraction over a minute.

Personally I do not like intermittent exposures, but tests show that there is little error, and that error is less than that caused by moving or dropping a slide at 1 second or 2 second intervals. The $\frac{5}{6}$ or 150 degree exposure is of little practical use in measuring speeds of inertness, but the equivalent at unit distance, viz. 10, is important in regard to gradations.

It is well known that gradations can be varied by changes of developer, and that the addition of bromide is useful in this respect, but it slows a paper, and is apt to give greenish blacks. I am experimenting on the subject, and will send further particulars.

When making a print by contact the different opacities of the negative absorb their proportions of light, and the balance of the light is transmitted to the sensitive surface to do the work, so that means of measuring opacities is sometimes necessary. Further, it is useful to measure opacities occasionally to train the eye in judging them. The practical photographer has nothing to do with densities, but unfortunately, makers persist in marking densities only on their meter scales, and as the density (so-called) is the logarithm of the opacity a logarithmic table is necessary to translate these to opacities. On wedges that I use I have marked the scale of opacities and saved hours thereby.

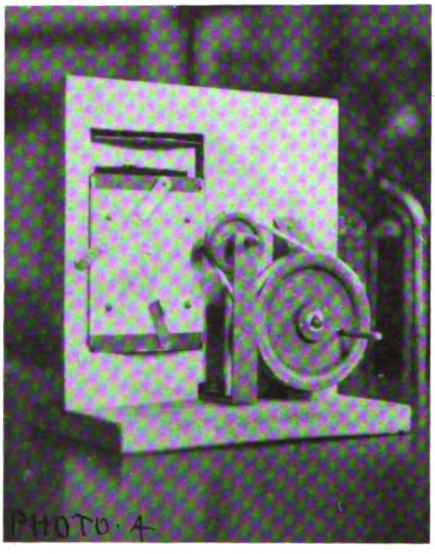
Ferguson, in the *Photo Journal*, 1912, and Hunter and Driffield long before, claim as an advantage the absence of a screen between the negative and the eye, and I have found that the removal of the ground glass between the negative and the eye in a (so-called) density meter to be an improvement, and I use a strip of celluloid with mat surface



above the negative, and wedge, and so equally diffuse the incident light, and prevent direct light shining on the negative or wedge. I also use a mat celluloid carrier to hold the negative, and clip the portion to be measured

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over a semicircular hole in the carrier which registers automatically with the similar hole in the apparatus, and I measure all doubtful negatives as I clean a batch. When I measure the greatest opacity I mark the measurement on the negative with a minus (−) sign to show that a less exposure than that marked should be given. When the second greatest opacity is measured the minus sign is omitted.



The opacity so found multiplied by the speed or inertness of the paper, or what is equivalent, divided by the denominator of the fraction expressing the inertness gives the exposure in candle foot seconds. As example: A negative of 40 opacity and a bromide paper $\frac{1}{4}$ inertness will require 10 seconds exposure to a candle 1 foot distance, or 5 seconds to a candle $8\frac{1}{2}$ inches distance, or $2\frac{1}{2}$ seconds at 6 inches distance. Up to half plate medium negatives a candle at a distance approximately the focal length of the lens used gives uniform and sufficient illumination. For larger or very dense negatives two candles may be used.

I have designed a very simple photometer useful for both intensity and opacity measurements, which can be made in the form of a bench photometer for accurate work, or in a simple box form for approximate work. If to be used for opacity measurements the photometer head can be made large enough to hold a whole negative instead of a strip.

The photometer head consists of a shallow box set vertically, and having a vertical slot about $\frac{1}{4}$ inch wide near the centre of the back. In front of this slot and on its left hand is a narrow white screen about $\frac{1}{2}$ inch wide and set at an angle of 35 degrees with the back, and at the back of the slot, and on the right hand side a similar screen *A*. The front screen *A* is illuminated through an opening *C* at the end of the box by a light source *D*, and the back screen *E* is illuminated by another light source *E*, and screen *B* is visible through the slot to the observer at *G*, and is slightly overlapped by screen *A*. For intensity measurements either the light sources, or the box can be moved until the apparent line between the screen vanishes, and the squares of the respective distances from light source to slot will give the relative intensities in the usual way.

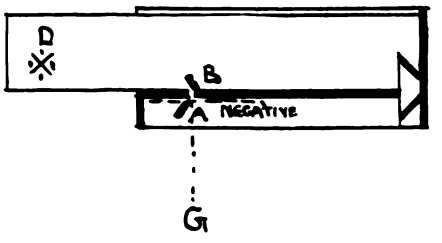
For opacity measurement light sources *E* and *D* should be of similar power and *D* fixed at a distance to give a definite illumination on *A* (a candle 3 feet 2 inches from the slot will give $\frac{1}{10}$ of illumination. The opacity to be measured is slipped along the back of *A*, and in front of the slot and screen *B* viewed through it, and the light source *E* moved until balance of illumination takes place. The *CF* illumination on *B* divided by that on *A* gives the opacity. For the screen *A* and *B* white matt celluloid (as used with the lumeter) would be preferable, but Bristol board (rendered more matt with flour emery cloth) does well. When measuring opacities it is necessary to isolate the portion being measured by examining through a tube or telescope which can be moved up and down in front of the slot. General arrangement is shown in Fig. 5.

For a compact form in which the bench is not necessary, and which almost anyone can make, the photometer box is made larger 15 x 7 x 6 inches deep with a longitudinal divi-

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sion about 1½ inches from the front, and the slot about 2 inches from the left hand end. Only one light *D* is used on a moveable slide, and it directly illumi-

FIG. 6



nates the back screen *B*, and is reflected by two mirrors at angles of 45 degrees to illuminate the front screen *A*. The illumination on *A* thus varies in accordance with the movement of *D* (in my instrument ⅛ to $\frac{1}{12}$), but for approximate work I assume $\frac{1}{16}$, and with this can measure opacities up to 100. By flattening the angle of screen *A* to 34 degrees the illumination will be halved, and opacities up to 200 can be measured. With an accurately measured second scale for the reflected light, or the two scales combined into one, a light source of any intensity such as an electric bulb can be used, and with this the instrument could be tilted to a convenient angle instead of with the division vertical.

By substituting a test strip of paper made with the drop shutter or sector machine for screen *B* approximate measures of papers can be made, especially with the holder at an angle of 34 degrees instead of 55 degrees.

The mirrors must be accurately adjusted to secure uniform illumination on *A*. General arrangement shown in Fig. 6.

BANQUET FLASHLIGHT POSSIBILITIES

By CHARLES F. OURSLER

DOES the banquet flashlight business pay? As Hamlet would say, that is the question which photographers have not always been ready to answer in the affirmative. The time, labor, and expense involved when weighed in the balance with financial returns have sometimes tipped way below the equipoise. But that, I am constrained to believe, has been the photographers' own fault, through lack of certain knowledge. When all the possibilities of the trick are exhausted the returns should be satisfactory.

If John Jones, picture man, has been engaged to photograph the banquet of the Chamber of Commerce in his town, it is not enough that he mail a print to the chairman of the committee on arrangements next day, accompanied by a bill for ten dollars or so. Even the most non-progressive men in the game have grown beyond that. Merrymakers at the festive board nowadays expect to have the print passed around for inspection—and ordering—within a very short time after the exposure was made; long before the toastmaster has introduced the first orator of the evening.

In my reporting days I attended a great number of banquets, three or four every week, season after season. From what I observed there I believe that the chances of selling pictures at the banquet board may be largely increased, and that the value of the work may be tenfolded if it be handled properly.

Plans should be laid, if such results are to be achieved, long before Horn Harbors or Consomme Celestine are served. Having been engaged to take the picture, the photographer should make it his first business to see the manager of the hotel where the feast is to be served. Usually that worthy can be prevailed upon, by promises of

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a print for use in his advertising literature, to allow the photographer the privacy of some small room near the banquet hall. This is to be the darkroom. Then the stage can be set early enough for the photographer to attend to his second and equally important end of the task—that of calling on the city editor of each morning newspaper in town.

Reporters from these sheets will have been assigned to cover the function that evening, but the papers will have no photographers there because the members of their art departments do not work after six o'clock in the evening, except on occasions of extraordinary importance. That does not mean the city editor doesn't want a picture of the affair, however. He wants a picture of anything of importance that happens, provided the print is good enough for reproduction on a coarse screen, and that he gets it in good time. It will do no good for the photographer to call up the newspaper office late in the evening and offer his picture for sale. He will have to make his arrangements in advance if he wants to do business and that is the occasion for his afternoon call.

To the city editor, or whomever else he is referred, he should state his proposition briefly and in a business-like fashion. It should be emphasized that only a nominal sum—anywhere from fifty cents to a dollar, I suppose—will be asked for the print, but that the photographer expects a reading notice under the cut praising his swiftness in producing the finished picture to the banqueters so soon after it was flashed. To this the city editor will readily agree, provided the occasion is important enough and the photographer can let him have the picture by 9.30 o'clock at the very latest.

Then it is necessary to make arrangements for getting the picture to the office in the quickest possible manner, as the hotel where the supper is served may be miles distant from the editorial room. If, as is often the case, reporters will cover the assignment in relays, there will be little trouble. To insure "early copy," one reporter will cover what happens until about 9 o'clock, then leave his companion to take care of the rest while he returns to the office to write his material. Under such circumstances it would be an easy thing to entrust the print to him, which would insure quick and certain delivery. When this is not possible, a messenger should be secured with instructions to rush his package to the newspaper office, or offices if the photographer succeeds in contracting with more than one publication, with all speed.

There is yet one more preliminary. The photographer has agreed to furnish the picture on time, and he must make sure that no delays will hold up his game. To this end he should hunt out the toastmaster—he will not be hard to find—while the guests are assembling outside the banquet hall. The circumstances should be explained to him briefly, and he will be more than willing to assist in seeing that the picture appears in the paper next morning. There will be no difficulty in having him ask everyone to "look pleasant please," before the first course has been tasted. With that promise extracted from the toastmaster, the photographer may light a cigar, serene in the contentment that the stage is ready and the curtain can go up whenever it gets "durned good and ready!"

So much for the advertising end of the flashlight. With the arrangements perfected as described there is little that can happen to prevent the complete success of the job. But the operator has still another row to hoe.

It must be remembered that men at a banquet are not under normal conditions and therefore are not in a normal frame of mind. They are often excited and inclined to be hilarious, and they are always impressionable. To sell a great number of pictures, therefore, the photographer has only to be psychologist enough to make a deep impression. As for instance:

Napkins have been unfolded and biscuits broken, the orchestra has crooned out its overture, and the first course is about to be hustled in. But the toastmaster is rapping on his plate for silence and attention. Making good

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his promise, he asks the company to be still and quiet and smile its sweetest until the flash is made.

There is the photographer's chance. He is beside his camera, ready to explode the shot. All is still. The crowd is expectant. Was ever a better opportunity presented to make a speech? Like this:

"Ladies and gentlemen, we are about to perform one of the wonders of modern photography. I shall take this picture now, and within an hour it will be passed around for you to inspect, and you may order as many as you care to, after you see it!"

Bang! The picture is made.

This whets the vanity, the curiosity, and the appreciation of the guests all at the same time. That such quick photography as he has prophesied is no miracle, matters not. It *is* one of the wonders of modern photography; the operator was fully justified in what he said; he has deepened the impression upon the crowd enormously, and made clear a point that the stupid among them—no inconsiderable number—inevitably miss. Anticipation, too, has been aroused, and keen interest, which means more pictures ordered.

Thus, by careful planning, it is possible to make the flashlight game pay, not only in actual returns, but in free advertising as well. As the business manager of the paper with 75,000 circulation would argue, "It would cost you a pretty sum to have 75,000 circulars printed and distributed, now wouldn't it?"

SELLING ENLARGEMENTS

A MARKED feature of the business done by professional photographers has been the great increase in the number of enlargements sold in good class studios. For some years enlargements have been neglected by a good many photographers, largely because they have felt that the public associated enlargements with the cheap productions offered in connection with the advertising schemes of certain manufacturers and newspapers.

That this feeling on the part of the public did exist cannot be gainsaid. Whether photographers did what was best for themselves in treating it as they have is another matter. Here and there, scattered about the country, are photographers who have kept on selling enlargements; these men have found that if they offer enlargements as good as their smaller work they can sell a number in the course of the year. They have proved that the public which is willing to pay the price of a good photograph, is, very frequently, willing to pay the price of a good enlargement as well.

But it must be a *good* enlargement. The photographers who have made, and are making, a success of enlargements as a "side-line," are those who have realized that their customers can tell as readily as themselves the difference between the good and the bad. These people may not understand why one is better than the other, they may not know anything about the methods of production—but they do know just as well as the photographer whether the total effect is pleasing or not.

Enlargements up to 12 x 10 or 15 x 12, especially when "solid" from dark-background negatives, may well be made in the photographers' own workrooms. But successful enlarging calls for a high standard of negative production. Pinholes, scratches and other development markings, as well as faulty retouching, all show up badly in an enlargement and need a great deal of time to make good. And the quality as well as the quantity of the work done must be right. It sometimes happens that an artist who is quite able to finish cabinet "sketches" attempts to finish a large head and shoulders enlargement. After some hours of laborious stippling the

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only result is that all flesh texture is lost and, very frequently, the modelling of the features is so altered that the "likeness" is lost as well.

Unless the photographer is a really capable artist himself or has enough work to keep an artist going, it is much the best plan to have all finished enlargements made by one or other of the trade houses which make a special feature of this class of work.

The enlargement which sells best nowadays is not the vignetted head and shoulders with a cloud background mounted on an india-tint plate-sunk mount which was sold so much ten or twelve years ago. Generally speaking, it may be said that the "sketch" style prevails. That is to say that no margin of mount shows. Backgrounds are light. Very frequently only the head itself is enlarged, and the remainder is drawn in by hand with either pen or pencil.—*The Professional Photographer.*

SOME ADVICE ON THE SUBJECT OF COPYING WORK

By S. BERTRAM

ALTHOUGH no copy of a paper print can ever be quite as good as the original, if the work has been properly done the difference between them ought to be so slight as not to be noticeable; while if the original is a faded, yellowed, silver print the copy in some respects may appear to be the better. Copying, however, is a little out of the beaten track of amateur work, so that many of the copies which are made are nothing like as good as they should be.

The conditions of success are (1) proper illumination, (2) accurate focussing, and (3) correct exposure and development, and it will be well to consider them in that order, which represents, moreover, the order in which the problems of the work present themselves.

Upon proper illumination of the subject far more depends than might at first sight be supposed. The surface of a print is not perfectly smooth, but is broken up into countless little hills and valleys. This holds good even of prints on "smooth" or "glossy" paper, still more of the matt or rough prints which are more commonly met with. Then, again, many professional prints have been carefully "spotted" with pigment to hide any little defects, and while such work may be quite invisible if the lighting is right, if it is wrong the spots may stand out more distinctly than anything else in the print.

For convenience in focussing, the original should be fixed in a vertical position, preferably upside down; and if it cannot be kept flat in any other way, it may have a piece of glass fastened over it. If the print is on a gelatin coating of any kind, and there is no objection to wetting it, a particularly fine grainless surface may be given to it by soaking it in water, squeegeeing it face downward on a piece of clean glass, and photographing it through the glass. There is no need to wait for it to dry.

To emphasize irregularities of surface, every photographer knows that a strong side light, coming from one side only, is best. Therefore, *per contra*, to minimize irregularities we must get the illumination from the front as much as possible and falling equally from both sides. Just inside the window of a room, with the subject one side of the window and the camera the other, is the worst possible place in which to do copying work, even the slightest irregularities of surface will be shown up. On the other hand, one of the best places is to have the original just inside the window and facing it, and the camera outside. Out of doors is a good place for copying,

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especially if there is something a little distance overhead to cut off the excess of top light; but in windy weather when working out of doors we may get trouble with movement of the original or even with vibration of the camera.

It will be found much easier to do copying work if the original is fastened by means of drawing pins to the side of a box, and the box itself is placed on a table, on which the camera also is placed. The original is fixed at such a height that its centre is exactly on a level with the centre of the lens. If it is too big to allow of this the camera must be placed on a block of wood or other support so as to bring it up to the required height.

When there are several lenses available, the photographer may be tempted to use one of short focus in order that the camera extension may be kept down, but unless this is an absolute necessity it should not be done. Wide-angle lenses cannot illuminate the plate as evenly as those which for the same size are of longer focus, and in copying work even illumination becomes important. It is generally necessary also to stop down a wide-angle lens more than one of medium or narrow angle; and although in most copying work the exposure does not have to be cut down to a minimum, there is a feeling among those who have much copying to do in favor of large apertures and short exposures.

A rectilinear lens must be used, or the original will be distorted. By rectilinear is meant any lens that is non-distorting, and not merely one of the types as "rapid rectilinears" or "wide-angle rectilinears;" in fact, an anastigmat of any modern pattern—all of them are rectilinear in this sense—would be a better copying lens than the "rectilinear," so-called, since the latter necessitates a smaller aperture if it is to give a perfectly sharp image right up to the corners. The writer has an anastigmat which at *f*/6 will give a better image over the whole of the plate than a really first-class rectilinear will give unless it is stopped down to about *f*/16.

Focussing in copying seems to puzzle some workers, who do not for the moment realize that when the work is being done at such close quarters a very great extension of the camera may be needed, far more than under ordinary conditions. The distance between the lens and the object is so short that racking the lens in or out appreciably affects its distance from the object. The writer has known of a case in which a photographer trying for the first time to do some copying has failed to get a sharp image after half an hour's focussing, because of this. Of course, nothing like so long need be spent over such a task if the fact that moving the lens not only varies its distance from the ground-glass, but also from the subject, is borne in mind. It is for this reason that when there is much copying to be done it is worth while getting a camera which has its front fixed and focusses from the back.

One of the first things which the amateur who is confronted by a copying task has to determine is on what scale his apparatus will render the image. If he wishes the copy to be the same size as the original, then his camera must be able to extend twice as far as it usually does when landscape or similar work is in progress. It must, therefore, have "double extension" at the least; if it has triple extension, so much the better.

By racking out the camera as far as it will go, and then focussing by moving it to and from the original, we learn the greatest scale on which work can be done with that lens and camera, which is that of the image when it has been made sharp in this manner.

The simplest method of focussing is to rack the lens to what is thought to be about the correct position for it, and then to move the camera to and fro until the image is sharp. If it is then not on a large enough scale, the lens is racked out a little and the focussing is repeated; if the scale is too large, the lens is racked in.

As the original in copying work is almost or quite flat, it is of great importance to have the front of the camera quite parallel with it. A simple method of securing this result is to focus with the full aperture of the lens, and note if all four corners are equally sharp at the same time. If they are, the camera

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may be assumed to be parallel with the subject. Unless the lens is a flat field anastigmat, we shall not get both centre and corners sharp with full aperture; in fact, we may have to stop down the lens a good deal. The best general focus should be ascertained with the full aperture, and then stopping down the lens a little at a time, the image should be refocussed, until at last it is sharp all over. As already pointed out, this should be obtained with as large an aperture as possible.

Magazines and other cameras which have not sufficient extension to allow of copying on a large scale with the lens already fitted to them can only be used for this work by adding to the lens a copying magnifier. This shortens its focus sufficiently to allow it to be used. The magazine type of camera, however, is the least suitable outfit for work of this kind that can well be devised, not only because of its limited extension, but also because of the absence of a focussing screen.

The exposure must be ample, or sufficient vigor cannot be obtained in the negative no matter how long development is carried. An exposure meter is the only reliable means of determining how long to give; but those who have not got one of these invaluable instruments can make a trial exposure, pushing in the shutter of the dark slide a little at a time so as to obtain a series of different exposures on the one plate, developing and fixing this, and then making a second exposure in the light of the information gathered from it.

Where there is a great deal of copying work to be done it is worth while getting a supply of slow, or "landscape" plates, and learning how to use them for the purpose, but excellent copies may be made on the rapid plates used ordinarily for hand camera and similar work, and for occasional use it is better to employ that with which one is accustomed to work. For copying, backed plates offer a great advantage. Orthochromatic, and, in some cases, panchromatic, plates give better results than ordinaries, although in others, particularly with faded silver prints, non-orthochromatic plates are much to be preferred. Regular copyists make great use of such differences, but the amateur to whom the making of a copy is merely a very occasional incident will find he will do best by working throughout with the materials to which he is accustomed.—*Photography.*

CARBON PRINTS ON JAPANESE PAPER AND VELLUM

THE peculiar transparency of Japanese paper and vellum, and the value of the same, are never more strikingly shown than when used for the final support for carbon prints. It is true they are a little troublesome to work, but with care exquisite results can be obtained. The first thing to do is to clip the sheet of paper or vellum down so that it will not shift, and then work into the pores a collodion composed of—

Pyroxylin	7½ gr.
Methylated ether	½ oz.
Alcohhl	½ oz.

This should be applied with a camel-hair brush and worked into the surface, and no less than three coats given, allowing each to dry in between. The carbon print is transferred on to the surface thus prepared, and possesses transparency which gives a richness and depth in the shadows attainable by no other means except by using a transparency in contact with paper.

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THE PROFILE VIEW[1]

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

THE absolute profile view, as seen on coins, making a clean line from the root of the hair to the throat, showing entirely one side of the face and nothing whatever (not even the suggestion of eyelashes) of the other side, is always interesting. Its principal charm lies in the uninterrupted line. For that reason sculptors use, with preference, the profile view in all medal and bas-relief portraiture. Modelling in low relief is really nothing but drawing with actual form, and the human face never yields a better line than in a profile view.

It, however, has its restrictions, particularly so in a black-and-white process. A profile is more limited in expression than the full face or three-quarter view. There is but little chance for expression in the eyes and lines of the mouth. We are also apt to be more familiar with the features of a face in the variations of a three-quarter view than in clear profile. For the photographer (who primarily strives for likeness) it is, therefore, advisable to use the profile view only when it is specially characteristic of his sitter. And it is specially characteristic only when the line of the profile is either very strong, as in the head if the painter Fortuny and the portrait by C. Ruf (a German professional), or very delicate and pure, as in the painting "Confirmation," by W. Llewellyn; or peculiar and out of the ordinary looking, as in John W. Alexander's "Woman in Pink."

Of course, there are people who desire a profile view even if their faces are not specially adapted for it, *i. e.*, neither perfect nor interesting in line. In such cases it is well to hide the defects by placing, for instance, the hand at the chin, as in Fig. 1, or to arrange the hair in such a way as to form a subdued background to the line of the profile (Fig. 2). In a similar way the line can be broken by a broad-brimmed hat or a boa, as indicated in Fig. 3.

In the profile view only three positions of the head are possible. It is either looking straight ahead, or the face is



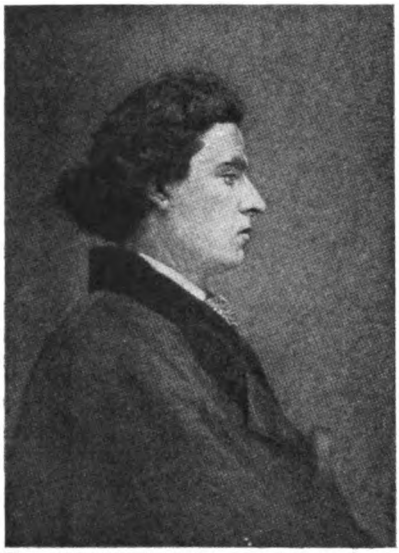
Fig. 1.

turned upward, as in the "Bartholomé" (French sculptor), by Steichen, or turned downward, as in the portrait by Ch. H. Davis. The latter attitude is generally indicative of a pensive, restful mood.

It is very essential in both the upward and downward turn that the gaze of the eye be concentrated upon some object. A picture must explain itself. If the eyes gaze into vacancy, they are apt to lend a mournful, melancholy expression to the face, which is hardly desirable in portraiture. You will notice that the lady in Davis's picture is looking down at the flowers fastened to her corsage. It would be a better composition if she were looking down at

[1] From Composition in Portraiture.

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PORTRAIT
OF THE SPANISH PAINTER
BY FORTUNY



"CONFIRMATION" (PAINTING)
BY E. LLEWELLYN



"DAISY"
AMATEUR PHOTOGRAPH



PORTRAIT
OF PAINTER WESTERHOLM

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the flowers she holds in her hands. The facial expression would be a trifle more cheerful. A good example is also the portrait of Victor Westerholm, a painter at work looking at his picture. In the same way the gaze could be fastened upon a book, upon needlework, etc. The downward gaze is the only one possible in the downward pose of a profile head, at least in legitimate portraiture. As soon as the eyes in that peculiar position of the head would look straight ahead or upward they would express some human emotion, like curiosity, suspicion, malice, or mischievousness, and do not enter the range of portraiture, except it were the representation of an actor in a part which would necessitate such special expression.

The upward turn of a profile head is apt to express a dreamy, exalted, or inspired disposition in the sitter. It is well carried out in Steichen's "Bartholomé," this sculptor contemplating his own work (he is standing under the portico of a tomb with gigantic figures); also in this attitude of the head the eyes can only look in one direction, namely, upward.

When the head is neither lowered nor raised, but in its natural position (as depicted on coins), the eyes look either straight ahead, as in the Fortuny, or downward, as in the Ruf portrait—*i. e.*, the eyes look as if they were closed, almost entirely covered by the eyelid and lashes. The first is apt to lend an austere expression to the face, which will show few physiogonomies to the best advantage. The latter gives a contemplative expression to the face, and is to be preferred in most cases, particularly with women. To make the person read a book, as in the "Confirmation," may often help the interest in the composition.

As said before, the profile view, no matter how it is arranged, is limited in facial expression. It is almost impossible to do anything with the mouth. An open mouth would be as much out of place as too tightly closed lips. Nothing else remains but the lightly closed or half-open mouth. Much can be gained by the position of the neck, for instance, by thrusting the face forward, as in the Alexander picture. Of course, this can only be done when the figure is shown. The "Woman in Pink" is in many respects an ideal profile composition. Everything—the line of the face, the neck, the arm and hands, as well as the arrangement of the dress—has been sacrificed to the beauty of line. The composition is photographically possible, but I do not remember of ever having seen anything in photography quite as interesting in this line.

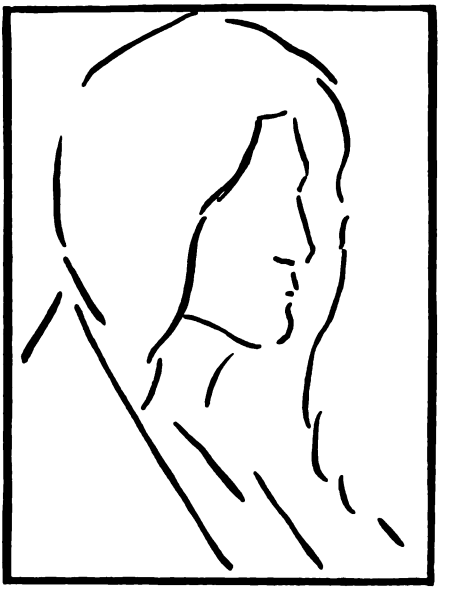


Fig. 2.

There are several variations of the profile view produced by a slight (at the first glance scarcely perceptible) turn toward or away from the spectator. Neither the portrait by Eastman Johnson, the bust portrait by Davis & Eickemeyer, nor the fancy head by S. H. Lifshey, are perfect profiles.

The woman's head in Eastman Johnson's portrait is turned just a trifle toward the spectator. It shows a glimpse of the other eye and both lines beneath the nose. It subdues the severity of the line, accentuates the chin, and lends firmness and strength to the lower part of the face. It would help people with a weak chin, but would hardly look well with a strong one.

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PORTRAIT
BY CHAS. H. DAVIS



PORTRAIT
BY C. RUF, FREIBURG, GERMANY



PORTRAIT
BY H. MISHKIN



PORTRAIT
BY DAVIS & EICKEMEYER

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The position of the head in the Davis & Eickemeyer bust portrait is not a fortunate one. The upper part of the head is slightly bent backward and lowered, by which movement the chin is raised. The pose is natural enough, but confusing, as it spoils the shape of the head.



COPYRIGHT
BY S. H LIFSHEY
BROOKLYN, N. Y.

In the Lifshey portrait the head is turned so far away from the spectator as to accentuate the cheek line. The girl looks pretty enough. Her face was probably specially adapted to this treatment. But in most instances the principal features of the face lose their definiteness by being too close together. The so-called three-quarter profile view (viz., the study by F. S. Willard) has solely pictorial value. Nobody would have his regular portrait taken that way, although the pose in itself is quite beautiful.

As far as the placing of the head in profile portraits is concerned, there is one rule that generally ought to be followed. There should be more space in front than back of the head. The Mishkin and Davis & Eickemeyer heads are badly placed. Also the Eastman Johnson is not a perfect composition. Good in that respect are the Fortuny, the Ruf portrait, and the "Confirmation." Of course, there can be exceptions to this rule, as the Alexander portrait, but there the lack of space in front is balanced by the backward position of the arm. Effective at times is the trick of showing only a part of the head as in "Daisy" and the Willard study.

Much of the success of a profile view depends on the lighting. The most reliable way is from above, as in the Fortuny, Alexander, and Eastman Johnson. Light from the side, leaving the top of the head in the dark, as in the Ruf portrait, is apt to lend a weird effect to the entire composition. When the face is not seen in full profile the



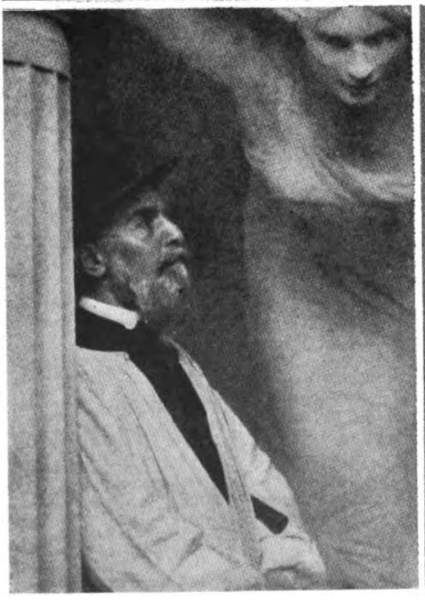
Fig. 3.

play of light on the lips and chin becomes very important (viz., Mishkin). It really makes the picture. If the face looks downward and the light comes from above, as in the Davis portrait, the profile almost turns into a silhouette. If strong light effects are desired, it has to be managed from below.

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"WOMAN IN PINK" (PAINTING)
BY JOHN W. ALEXANDER

"BARTHOLOMÉ"
BY E. J. STEICHEN

PORTRAIT (PAINTING)
BY EASTMAN JOHNSON

PROFILE STUDY
BY F. S. WILLARD

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OVER FIFTY YEARS OF PHOTOGRAPHY

By DAVID BACHRACH

PART IV

HAVING now given, I am afraid in a rather desultory style, my personal experiences in over fifty years of photography, I will conclude the series by giving my photographic career from the time I opened a studio in Baltimore in October, 1869, and my own experience may be copied and followed with success at this time by giving thorough attention to business and living a normal, temperate life. The business I started then has continued improving and occasionally falling backward, until now with the ability and energy of my son it is the largest in this city, larger in reality than any that have been here before—speaking of straight photography. One thing is required now which I did not have to commence with, real artistic feeling. At that time, retouching of negatives was just being introduced and I went into that to some extent from the year 1870.

I had bought out a studio where I occasionally took the place of the owner, in his long abscences, with a few hundred dollars I had saved at the age of nearly twenty-four. Its patronage was made up to a good extent of ferrotype work and also the transparent microscopic work. I cut out both of these things at once—the entire force consisting of myself and a boy—and confined myself to straight photography. My receipts fell off the first six months from an average of about $100 a week under the former management to about $35.00 Discouraging, was it not? In a year's time I was taking in about $150 a week, in two years' time about $200. My force then was added to by a printer and receptionist, while the retouching was given out.

I followed the Sarony style of lighting as far as I could, and many a rebuff I received by being told by patrons that they were not negroes. My method of self-toning plain salted paper made that printing method very simple until everything was done on the bright-surface albumen paper. In 1875 I added my younger brother to the business, and it was then known until 1910 as Bachrach & Bro. Until about 1900 out-door photography and solar camera printing was no inconsiderable part of our business. Our invariable policy was very independent in our business rules, but we went to the limit in not allowing any patron to suffer from any fault of our own. We kept our patronage without any push or advertising or ticket schemes for many years.

We suffered from price cutting and ticket schemes but we never changed our policy. I find that even to this day, with modern methods, we get the third generation of former patrons, and they seek us out instead of our having to seek them, and what is better we always paid one hundred cents on the dollar promptly. We always had more credit than wealth on that account. We have had close, troublous times, but never had to depart from that standard.

Shortly after the adoption of the rapid dry plates, about 1880, the high-gloss collodion papers and the same quality of gelatin print-out papers took the place of the albumen, as they produced a high gloss and were less troublesome to work than albumen papers. It was a distinctly retrograde step in every way. It also produced another step equally bad, which I distinctly warned photographers against. They adopted the hard, wiry, sharp lenses of the rapid retilinear type, intended only for landscape and interior views and groups, for general protraiture, and the results were abominable. The soft gradations of the portrait lens with its gradual, out-of-focus effects

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on the edges of the picture, producing roundness and plasticity, were thrown aside and in many cases at a sacrifice, and the hard lenses purchased. Many of the old lenses were afterward repurchased at a great advance.

Speaking of lenses, during our Civil War this country produced portrait lenses, made by C. C. Harrison and Holmes, Booth & Hayden, superior to any made in Europe until the Dallmeyer "B" series was introduced. We have a C. C. Harrison lens at our Washington studio that no one could buy from us. A look on the ground glass alone satisfies any posted photographer of its superior quality, both in speed, roundness, and a quality seldom seen in our most modern anastigmats. The later products of Voigtlander, Goerz, and others, since the introduction of Jena glass, has put European opticians ahead of us.

I think the first important revolution in our art took place in 1879, when Mr. W. Willis, Jr., who came from England with Mr. Alfred Clements, introduced the platinotype process. We were one of the first to buy a license—we had to prepare our own paper and used it only for solar enlargements. After Mr. Willis improved it so the results were more certain and finer, selling us the paper prepared, I attempted to use it in the line of regular portraiture. It was almost like taking a backward jump from the fine detail of high-gloss paper back to the soft plain-paper pictures of the olden time.

How difficult this was may be seen from the following incident: One of my closest patrons was Mr. Wm. T. Walters, an art collector (Walters' being one of the best private collections in the country), a railroad owner, but formerly in the wholesale liquor business. I had made some groups for him and, as a compliment, printed him one copy of platinotype and handed it to him, and asked his opinion. He looked it over carefully and said: "Bachrach, I made money by selling people the kind of whisky they wanted, not the kind I thought they ought to have."

Well, I followed his lead and it was five years before I made the serious attempt to do away with glossy paper. Meantime we had the fading gelatin print-out papers and the scandal they brought on the business in many cases by rapidly fading. I have explained in former articles, years ago, why no print-out paper in silver can compare in permanence with developed papers, especially if toned to sepia with hypo-alum, and I will not repeat that. The platinum process supplied us with not only the most artistic but the most permanent pictures of all, and photography has thus become a respectable art and profession. We must take off our hats to Mr. Willis, and his years of splendid technical ability and work, as the savior of modern photography.

From that time on photography has been gradually divided into three classes—the commercial, the cheap postcard and ticket-scheme studios, and the first-class ones devoted to high-priced, artistic productions. Each is in a class by itself, and any attempt for one man to do all or even two of them I think must fail. My family attempts to conduct only the latter class—my oldest son, Louis Fabian, having studios in Boston, Worcester, and Providence, and my younger son, Walter Keyser, and myself having them in Baltimore, Washington, New York, and Philadelphia.

Whether these combinations will finally succeed after some years is a question still unsolved. Any artistic man with proper intelligence and some business ability can still start a small one-man business just as easily as I did over fifty years ago. The ruin of many first-class men in photography has been high-living, intemperance, and other similar evils. I need hardly mention the names of many now dead among these numbers, some of the best material we ever had. Some had misfortunes and were free from these evils. Among these I remember my old friend, Mr. Daniel Rendoun, one of the most artistic of the older set and who introduced many improvements in the profession, particularly those of printed-in backgrounds.

I was an early contributor toward WILSON'S MAGAZINE and for many years it was the best one published in the

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world, especially in its straight photographic illustrations. Mr. Wilson and myself were old friends and I owe a good deal to the standard set by his publications. I think in those days there was less of the purely sordid business element and more of the altruistic spirit, and one to give the profession an uplift. I trust that a little of that may be attributed to me after the very short time I still have to be remembered among the living.

ROUNDNESS AND BRILLIANCY

By CHARLES I. REID

ROUNDNESS and brilliancy are the chief indications of a chemically good photograph. Roundness may be defined as that quality in a picture which gives depth and roundness to objects, which tells us that the objects in the scene are located at a distance from each other, instead of being a plane surface. Brilliancy is closely related to roundness, and is a term used to indicate a picture having both contrast and softness in the right proportions. The only technically perfect photograph is one rendering the longest range of gradation in the right key. Since the longest range of tones possible to produce with photographic material is about forty degrees of gradation, this represents the limit of technical perfection. If, therefore, a negative, due to improper exposure or development, renders only fifteen degrees of gradation, the result will be contrasty. The other twenty-five degrees of gradation that were lost cannot be regained, even by using a soft printing paper. The soft paper will give a more pleasing result, by flattening out the tones, but will not add to their range, so that the result will lack roundness and brilliancy, in the sense that these terms are applied to a photograph. With proper exposure and development of the plate all of the forty degrees are rendered, and they can be reproduced with full roundness and brilliancy on any printing paper capable of a range of forty degrees of gradation.

It has often been noted that the early photographers, having only one grade of printing paper, were able to produce strikingly uniform results. This was due, not to any magical quality in the paper, but to the fact that they made their negatives to meet the gradation given by the paper, instead of adapting the paper to the particular negative. This is the logical method of working, for the print is the final result and the end to be worked for. Instead of adapting the end to the means, the means should be adapted to the end, the result desired. Brilliancy and roundness, or the stereoscopic effect, do not go with either contrast or softness alone, but are present only in a print possessing both. The only print that can have both contrast and softness at the same time is one having a long range of gradation, the longer the better. The contrast is supplied by the high lights and shadows, while softness depends on the range of tones lying between these two extremes. The amount of roundness and brilliancy a picture can possess is obviously also limited by the range of tones in the subject itself. This involves the lighting of the subject, also. If a portrait lighting is so contrastive as to show a range of only, say, ten degrees, a longer range cannot be reproduced in either the negative or print, and the result does not possess any degree of roundness or brilliancy, although it may be the particular effect desired. Under- or over-exposure of a negative causes contrast or flatness, and while the softness or contrast of a paper may make the print more pleasing, additional brilliancy and roundness cannot be secured. It is also obvious that the brilliancy and roundness of a good negative cannot be recorded in a print if the paper used is not capable of a scale of gradation equal to that of the negative.

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BECOMING A STAFF MOTION-PICTURE PHOTOGRAPHER

By ERNEST A. DENCH

THE free lance has unlimited opportunities, but when you attempt to break in as a regular camera man you at once find yourself in a dilemma.

Motion-picture producers are publishers in a way and their combined output is just a trifle less than two hundred reels weekly. I am referring, of course, to the manufacturers of national prominence, because there are smaller concerns scattered throughout the country. I take it for granted, however, that your particular desire is to get on the staff of one of the prominent producing organizations.

Now, one reel, one thousand feet, represents one week's work of the average cinematographer, so this means that the number of staff camera men is necessarily limited to two hundred. At the present time the tendency is to produce fewer and better pictures, and although the old-established companies, for the most part, are reducing their output, other concerns are coming into the producing arena.

Many of the camera men employed by the producers have been in the motion-picture industry since it was in its swaddling clothes, for the work is of such a highly skilled character that it may only be mastered by going through the school of experience.

Until quite recently the camera man was regarded in the average studio as a mere crank-turner, a mechanic, but nowadays the tendency is for artistic effects in productions and these are only possible by close coöperation on the part of the director and camera man. Naturally, the motion-picture photographer must know his business thoroughly, while he could formerly get by with just a surface knowledge of the fundamentals of his craft.

The free lance certainly has an advantage in that he is experimenting on his own behalf all the time, but even then he is handicapped for the above explained reason. The free lance cannot possibly have the same facilities for attempting production on a similar pretentious scale on his own account.

True enough, his knowledge of photography will serve him in good stead, but he will discover that he has a good deal to learn before he becomes anything like efficient.

The only way by which you stand a chance of becoming a camera man for one of the reputable producers is by working your way in the factory from the bottom up. Some positions which are stepping stones to operating a camera are perforator, developer, darkroom worker, tinter, inspector, toner, cleaner, negative cutter, title-maker, and joiner.

A competent camera man can command from $50 to $150 weekly, so the position is well worth striving for.

Unless you are located in or around New York City and Los Angeles, the two chief producing centres, your chances are less. There are, of course, studios in Philadelphia, Chicago, and Florida, but these may be counted on the fingers of one's hands.

Letter writing is seldom effective, as the producers receive so many applications for all sorts of positions that they are treated alike. It helps if you have "pull," but should you lack it your only alternative is to apply to the studio in person and interview the head of the technical department.

Just one last hint before I conclude. Watch the pages of the motion-picture trade journals closely, as they give particulars of companies just starting in business, and by promptly getting in touch with them you may obtain an opportunity to show what you can do.

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A NEW SHOW-CASE FOR THE PHOTOGRAPHER

By ALBERT MARPLE

THAT no one has a monopoly upon the ways in which a photographer may bring his work to the attention of the public has been demonstrated by a "picture man" in Hollywood, California. The accompanying illustration shows what this artist calls his "individual show-case." It consists of a structure built entirely independent of the studio, and flush with the sidewalk running along the street upon which it is located.



In the construction of his studio this photographer was desirous that his structure should possess a certain amount of "exclusive" atmosphere. For this reason he set his gallery about thirty feet back from the sidewalk, his intention being to display his pictures by means of the large plate-glass windows in the front of the show-room. After a thorough trial this photographer found that his place of business was too far back from the street for exhibition purposes. The people seemed timid about venturing so far in from the street, so it was very apparent that something or someway which would tend toward a more general study of the pictures would have to be devised. This necessity resulted in the construction of this unusual photograph display case.

This feature is made entirely of brick, with the exception of the plate-glass window, 5 x 9 feet in size, the trimmings for the window, and the limited amount of frame trimming. It is 10 x 11 feet in size and is located 20 feet from the porch of the studio. The brick walls of the structure are 14 inches in thickness and 10 feet in height. The fire wall rises above the actual roof of the structure for a distance of two feet, this being that it might conform with a very exacting fire ordinance of the city. It materially increased the cost of the structure.

Only half of this structure is actually taken up by the show-case, the front half being in the form of a vestibule. This vestibule section has three open-

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ings, the two at the sides being square, while the one at the front is in the form of a six-foot arch. The arch is self-supporting, while the sections of walls above the square openings are supported by 2-inch angle iron. Entrance to this show-case is gained by means of a door located in the centre of the back. This door swings outward and has been so skilfully covered with the trimming material that its presence cannot be detected from the front of the case. The ceiling of the vestibule has been finished in Mission style, with beamed effect.

The proprietor of this establishment, the Hoover Art Company, tells us that this case is worth its weight in gold to him. It cost four hundred dollars, but he claims it has paid for itself many times over. Instead of detracting from the appearance of the place, it adds to its exclusiveness, while at the same time it does not have the effect of "holding the public at a distance." By its use the studio may be placed back from the dust and most of the noise of the street.

"It's a day and night business-getter," said Mr. Hoover recently, referring to this novel show feature, "It is surprising how many people visit the case. Most of the folks who pass along this side of the street, as well as many who drive by in autos, stop and study the pictures that are on display."

DON'T put negatives or slides straight into hypo after development with hydrokinone. Give them a minute's washing under the tap, or there will be a risk of staining them yellow.

DON'T curtail the time for washing plates or prints. If they are worth washing at all they are worth washing properly.

DON'T leave a washing tank right way up when it is not in use. Drainings of water will accumulate and cause rust.

DON'T dabble the fingers in the solutions more than is absolutely necessary. Use a plate lifter.

TIME flies. Don't hold yourself back.

WE are all human (almost), and applause and approbation are the essence of life. You can't enjoy either unless you make good, and the $ in business gravitates to the worker who merits approval, so in the long run you get both.

DON'T keep within yourself. Express yourself. Reach out, read carefully, meet sensible people. Try to do more and better in every detail.

DON'T put solutions in unlabelled bottles, relying on memory to tell you their contents.

DON'T put negatives up to dry without giving them a final rub under the tap with absorbent cotton.

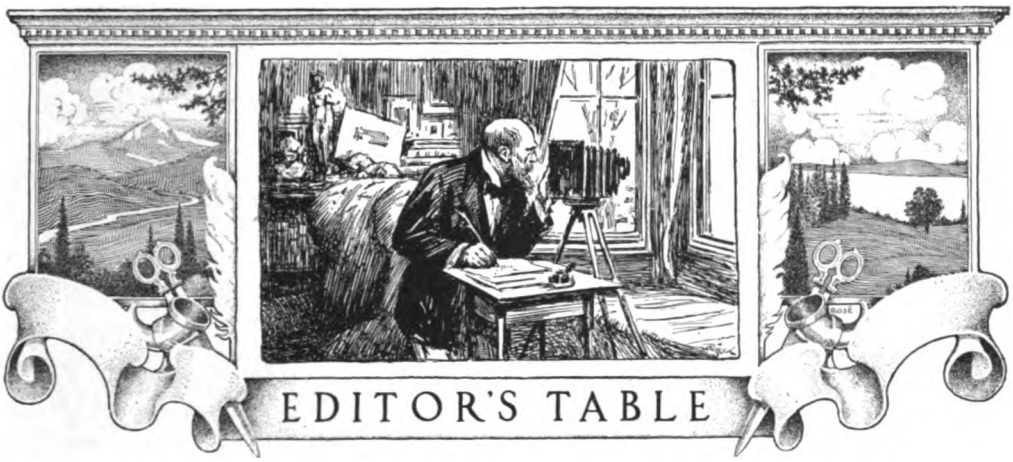
DON'T believe the dark-room light is so safe that there is no need to cover the dish during development.

DON'T take the negative out of the hypo as soon as it *seems* to be fixed. It isn't fixed; but it will be if given as long again.

DON'T eat, drink, sleep or work in a thoughtless way. Habit is a great force at your command, but see that you cultivate only sane, constructive habits.

Go on climbing where real knowledge counts. It alone is genuine, for no matter how much money you may have some fool could inherit or marry more, but as knowledge must be acquired through earnest, persistent, cheerful effort, there is not much competition.

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ON BEING PERSISTENT

WHAT is wanted today is persistency, and never was it more needed than at the present time, when business is for the most part a fierce battle in which men have to fight as for their lives. The difference between a successful and an unsuccessful man is generally a difference in their characters in respect to persistency. You may have every other good quality of a photographer and a business man, but if you lack persistency you are almost certainly bound to fail. A business friend of ours once remarked to us that "persistence and push" comprised his motto in busines. Most people might be apt to say at first thought that the two words mean the same thing. But that is not so. "Push" means the making of an effort, but "persistence" means the maintenance of the effort, or, to put it colloquially, keeping it going. We know many men who have got plenty of push, but who have never become successful in life because they have lacked persistence. They are a class of men who never stay long in a place; they start with plenty of push and plenty of determination, but by and by it fizzles out because they haven't the persistence to keep it going. Often enough such men are of brilliant genius, they may be skilled in handicraft, rich in inventive knowledge, full of resource, their moral character may be irreproachable, their education and attainments unquestionable, but they lack the one thing needful in business—persistence. Thus they fail, and they go through the world quarrelling with their fate, wondering why other men far less talented seem to get on and become successful, while they are left behind in the race. If you were to tell them that it was because they lacked persistency they would not believe it, because they do not know the true meaning of the word. There are very few men who do, otherwise they would more generally practise it as one of the cardinal business virtues.

Persistency covers a multitude of good points. It means continuance in action, to hold on, to keep up, to carry on, to pursue a thing. It also means sticking to, pegging away, harping upon, keeping going, keeping the pot boiling, keeping the ball rolling, keeping the thing alive. That's just it, persistency is movement. You may push with all your might, but if you don't make something move your effort is wasted. Philosophers tell us that *force* and *motion* are two very different things, though one may produce the other. It does not always follow that force applied will produce motion, but motion invariably produces force. Thus we see why persistency is even more important than push. Men will push you along if you seem to be going along, but if you falter on the road, they either hesitate

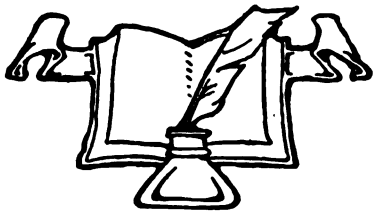
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or help to push you down. Thackeray says pithily, "You must tread on other people's toes or they will tread on yours." Every man who would succeed must have the talent to climb and the power to sustain himself when he gets there.

We often hear it said that such and such a man's success in life is due to his perseverance; but that means just the same thing as persistency. Others are pointed out as being successful through plodding; it is the same thing again, still persistency. Again, we say a man succeeded because he was consistent; true, yet he couldn't be consistent if he was not persistent. So it all amounts to the same thing in the end. Persistency is what we want, for if we have persistency we must necessarily have decision of character. The man who is perpetually hesitating which of two things he shall do first, will do neither. The persistent man, before doing anything of importance, will first consult wisely, then resolve quickly, and finally execute his purpose with inflexible perseverance, undismayed by petty difficulties which would daunt weaker spirits. There are thousands of men in business who are brilliant in conceiving things, or pushing in getting orders, but they fail for want of patience to carry matters through the trials and difficulties with which every business is beset. They begin well and mean well, but they end up badly. They are tired of the duty of executing an order before they are half through with it, so they cast it aside and start something else, which in turn gives place to some other new "fake," as the saying goes, until they are in a state of hopeless muddle-headed confusion, and the persistent man has to be called in to help them out. The men who are "to one thing constant never" are a numerous class, and the curious thing is that they generally pose as "smart" men of business, and even get credit for a time, but it is soon found out that this smartness is spurious coin which they have to pass somewhere else where they are not known, until they come to the end of their tether and end up their days ignominiously.

Depend upon it, the persistent man is the one who wins all the time. He may seem a bit slow alongside the so-called "smart" man, but he stays on while the other goes. "The mills of the gods grind slowly, but they grind exceedingly fine." And so it is with the work of the persistent man. It was the tenacious genius, the slowness, and the prudence of Wellington which baffled the rapidity and daring of Bonaparte and his brilliant tacticians. In all history it will be found that brilliancy does not count against persistency, though we often speak of a man as brilliant when we ought to have said he was persistent.

It is impossible to give any set rules for persistency. A man must know what persistency means and strive with all his might to live up to it. And it will need all his striving; it is so easy to get into the rut and let things take their course, pursuing the even tenor of one's way—heedless of circumstance—a policy which is the very antithesis of persistency. We are almost afraid the persistent man is born, not made, but there may be hope for some, otherwise our "straight talk" will have been in vain.



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LEAVES FROM MY NOTE BOOK

By an Old Hand

ENLARGING

A GOOD enlargement will often procure an order, and I make it a practice to occasionally make one from a good portrait merely on speculation. If not sold it is hung on the reception-room wall.

The following is my method of enlarging, which possesses no particular novelty, but some visitors who have seen it have thought it worth while to copy. I use no lantern, yet all my enlargements are made in the dark-room by artificial light.

I have cut in the wall of the dark-room an aperture that will take a 10 x 12 plate, and a local carpenter made a series of kits that will fit in this aperture snugly, one for every size plate down to 2½ x 3¼. Inside the dark-room is a wooden shelf, supported by stout iron brackets, which fold flat against the wall, and the shelf also drops down so that everything is out of the way till wanted. On this shelf is placed an old studio camera that has seen its best days and had been relegated to the lumber room. The lens is an old rapid rectilinear that did good service but has been supplanted for studio work by an anastigmat.

The source of light is a piece of tin bent to the arc of a circle and painted inside with dead-white enamel. This is the actual source of light as regards the negative, but actually the lights are two of the nitrogen-filled Mazdas, each 100 c.p. These are placed one on each side of the aperture and a piece of tin prevents any direct light from reaching the negative. If the tin is brought to the proper curve there is no necessity for using any diffusing medium, such as ground or opal glass. And the tin should also be brought round behind the lamps so that it acts as a reflector.

One great advantage of this arrangement is that there is no heat in the dark-room, and naturally there is no necessity to enclose the lamps. Naturally one could use one of the regular enlarging lanterns or even a stereopticon for illuminating the negative, but if the latter be used with an arc, a piece of ground glass must be placed between the arc and condensor to obtain equality of illumination.

Artificial light is far superior to daylight. It is more constant and it enables one to work at times, as in the evening, when daylight is not available. The exposures are never so long as to be a serious objection. I find that mine run about 60 to 90 seconds.

I use no easel for supporting the bromide paper, but an old 20 x 24 printing-frame, into the front of which is firmly puttied a sheet of plate glass. I first used a sheet of cardboard, marked with the various sizes of papers, but I found this a nuisance as it was difficult to keep the paper in its exact position when putting it into the frame; so I bought some sheets of black paper and cut them down to fit the frame, and in each sheet was cut an opening just large enough to take a given size of paper. These are laid on the glass, the sensitive paper slipped into place, and then a sheet of thick piano felt laid on top and the back put in. I have found this answer perfectly and never have the paper slip out of place. If, however, I want an unusual shaped print, and this sometimes happens, then I mask in front of the glass with strips of the black paper which are temporarily fastened to the frame with push pins.

Focussing is done on the sensitive paper itself, in all cases, and this is rendered possible by using a cap of yellow glass. This was also home-made, from an old lens-cap, and the glass is part of a fixed-out, well-washed dry plate that had not been exposed. The plate when dry was immersed in a 1 per cent. solution of tartrazine, a bright yellow dye, for half an hour and then rinsed and dried, and the front of the lens-cap was cut out and the rim glued to the glass, which was varnished with celluloid varnish to protect the dyed film. This gives a brilliant light that is perfectly safe and enables one to focus perfectly.

Let me add that a great deal of my outdoor work is now done with a 2½ x 3¼ pocket camera and then enlarged. So far as I am concerned, the day of the big camera has gone. This saves weight and cost of big plates. I use carriers and cut-up 8 x 10 kodak portrait films.

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ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Stripping Gelatin Plates

S. M. Furnald, in a communication from the Eastman Research Laboratory, states that he has found the following method to be the best for stripping the film of gelatin plates:

Sodium fluoride	2 parts
Formalin (40 per cent. formaldehyde)	1 part

The portion of film to be stripped is cut round with a knife and the above solution applied with a brush or flowed over. The film will become loosened from the glass in about a minute, and may then be easily lifted by applying over it a piece of dampened paper, lifting carefully one corner, and stripping carefully the paper and film away together. If reversal of the film is required then it is easy to transfer to a second piece of paper and from that to the final support.

The glass on which the film is to be laid should be perfectly clean and flowed over with a solution of a 5 per cent. gum arabic. A little glycerin tends to improve the condition of the stripped film, which otherwise becomes rather over-dry and horny, owing to the formalin.

With small portions of film there is very little danger of the film being torn or distorted, but if the plate is first bathed in formalin for ten minutes before applying the stripping solution the film will strip equally as well and is tougher and less liable to distortion.

When stripping large films the plate may first be flowed with:

Collodion	15 parts
Glycerin	1 part

and, as soon as the collodion film has set, flowed or immersed in the fluorid-formalin solution. The time required for loosening the film may be slightly longer, but this method gives a tough, leathery film, considerably stronger than the film stripped without the collodion coating.

The fluorid-formalin formula may be used to strip a dry-plate negative which has been coated with a thin rubber solution and then with the collodion and glycerin solution. This gives a film which has extreme tensile strength, is tough and flexible, and resists a shearing tear fairly well. The time required to loosen from the glass is much longer, but this objectionable feature may be, in a measure, overcome by the addition of 2 c.c. hydrochloric acid to 1 litre of stripping solution (10 minims to 10 ounces). The acid should not be added until ready to use, and the plate with the loosened film should be thoroughly rinsed to remove all traces of acid.—*B. J.*, 1916, p. 40.

The use of fluorids of the alkalies for stripping is not new; but so far as I know they have always been hitherto used with an acid, as suggested first in 1892. The idea of using the combination of fluorids and formalin is new and works excellently.

Bromoil by the Transfer Process

O. M. Bartlett describes the following modification of the bromoil process: Take a piece of gelatinized paper and soak till saturated in the following solution:

Potassium bichromate . .	2 gm.
Potassium ferricyanide .	3 "
Potassium bromide . .	4 "
Citric acid	2 "
Chrome alum	7 "
Water	1000 c.c.

At the same time soak a bromide print in cold water. The ordinary finished print should be used but it does not matter if it is too dark. Remove the bromide print from the water and place face up on a sheet of glass, then take the soaked gelatin paper and lay it carefully face down on the bromide print and remove air-bubbles and ensure close contact by using a flat squeegee lightly. Leave them till the print is bleached or nearly so, which takes from half to one hour. Then separate and wash till all the yellow color disappears. The oil print can now be inked in the usual way but it is better to let it dry first, and then just before using to soak it for about two minutes in water between 70° and 80° F.

The bromide print can be redeveloped with an amidol developer or may be sulphided.—*A. P.*, 1916, p. 28.

The Scarcity of Developers

It is announced that Hauff & Co. have informed their customers that as long as the war lasts metol and adurol can only be supplied when they are to be used for military work.—*Apollo*, 1916, p. 188.

Increasing the Brilliancy of Developed Prints

It is stated that prints on bromide and gas-light papers may be rendered more brilliant if they are rapidly dried over a gas or spirit lamp or placed in an oven or other hot place.—*Phot. f. Alle.*, 1915, p. 315.

Matting Glass

The glass should be coated with a 5 per cent. solution of gelatin containing 5 per cent. of sodium or potassium fluorid and then allowed to dry. When dry it should be immersed for about half a minute in a 6 per cent. solution of hydrochloric acid and again dried. Finally it should be immersed in hot water and the gelatin will dissolve and the glass will be found to be finely matted.—*Phot. Welt.*, 1915, p. 44.

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Casein as a Substitute for Albumen

In consequence of the rise in price of eggs in Germany it is recommended that casein should be used instead, as follows:

Casein	15 gm.
Potassium carbonate	1 "
Ammonia	100 c.c.
Ammonium bichromate, sat. sol.	100 c.c.

This has been tested out by Namias and Pola and found very satisfactory for photomechanical work.—*Zeit. f. Repro.*, 1916, p. 99.

German Raw Paper

The export of photographic raw paper from Germany has now been forbidden, in consequence of the possibility of the same reaching inimical countries through neutral ones. For some time sensitized papers have been on the "verboten" list.—*Phot. Ind.*, 1916, p. 775.

Nickelling Aluminum

The following process is recommended for nickelling aluminum, and it is stated that it is very resistant to many chemicals and the coating will only strip if the metal is actually broken. It can be hammered and bent and the coating is unaffected by air. The process is practically divided into two operations, the preparing and the plating. The metal should be first dipped in boiling solution of potassium carbonate, washed and scrubbed with milk of lime, immersed in a 0.2 per cent. solution of potassium cyanide and washed and then immersed in the following:

Iron	1 gm.
Hydrochloric acid	500 c.c.
Water	500 c.c.

In this it should be left till it takes on the appearance of crystallized tin plate. It is then thoroughly washed and plated in the following bath:

Nickel chloride	50 gm.
Boric acid	20 "
Water	1000 c.c.

—*Phot. Ind.*, 1916, p. 756.

VIEWS AND REVIEWS

"Photograms" for 1916

Photograms of the Year does not in any way belie its subsidiary title of "The Annual Review of the World's Pictorial Photographic Work." This claim is justified more than ever this year when we find among the literary contents articles dealing with the year's photographic work in Great Britain, Canada, Australia, the United States, Japan, Scandinavia, and Holland. The articles have each been written by an authority in the respective countries, and the fine series of pictures reproduced has been gathered from these countries also and from France and Italy.

When one realizes that the book contains a hundred fine reproductions of picked specimens of work by representative leaders in pictorial photography and others who have been "spotted" by the editor as coming men, the beauty and perfection of the contents will be readily understood.

The editor, Mr. F. J. Mortimer, F.R.P.S., reviews the year's work generally in an informative article. Mr. F. C. Tilney contributes an article in the nature of a critical causerie of the pictures reproduced, each one of which is dealt with from an art critic's standpoint. Mr. Antony Guest writes in an interesting and thoughtful manner on "Nature and Art in Photography"; and from Mr. W. R. Bland come some reminiscent notes on "The Vicissitudes of Photography" from 1895, when the first volume of *Photograms of the Year* appeared, to the present time.

Mr. H. Mortimer-Lamb, of Montreal, makes clear the position of pictorial photography in Canada; and Mr. Walter Burke, editor of the *Australasian Photo-Review*, gives some interesting personal ideas on pictorial photography in Australia. Mr. W. H. Porterfield, of Buffalo, one of the most energetic leaders with the camera in this country, gives his views on the position of pictorial work in the United States; and Mr. H. Yahagi, of Tokio, Japan, places before the Western reader a very clear résumé of what photographers are doing in the Far East. Dr. H. B. Goodwin, assistant editor of *Svenska Fotografen*, Stockholm, who is making great headway as a pictorial professional photographer in Sweden, contributes the article on Scandinavia; and Mr. F. L. Verster, secretary of the Ned. Club voor Fotokunst, Amsterdam, is very optimistic as to the future of photography in Holland.

An outstanding feature of the fine array of pictorial contributions—an exhibition in itself—is that, curiously enough, they hardly reflect the warlike times. This appears to be due to the fact that the censorship of the press and the press photographer has had a marked effect on the output of the camera abroad so far as it dealt with war subjects; and the editor is of the opinion that we shall have to wait until the war is over before its true effect as an inspiration

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for picture-making occurs, but that, with so literal a medium as photography, there are probably negatives being made even now of historic incidents that may bear fruit in the future as exhibition prints depicting subjects at present barred by the censor.

Photograms of the Year takes its place worthily as a book of notable pictures and fine printing; and with its special appeal to photographers it should be in the possession of everyone interested in the progress of camera work.

The price of the Annual is $1.25 in paper covers and $1.75 cloth bound, and it is supplied by the American agents, Tennant & Ward, 103 Park Avenue, New York.

"How to Choose and Use a Lens"

Under this title an excellent text-book has been issued by the American Photographic Publishing Co., at the price of 25 cents in paper covers, or 50 cents in a cloth binding. The text is entirely free from optical formulæ and symbols, but, nevertheless, supplies the reader with the working knowledge desirable in the choice and use of a lens. It carefully distinguishes between the different types of lens, and deals at some length with the chief anastigmats upon the market. It also contains some notes on lenses of the soft-focus type. The booklet concludes with notes on the testing of a lens, on the choice of focal length, and finally brings together a few tables and optical rules such as are likely to be of value in practical work. Altogether, a treatise which one may study with advantage in the aim of becoming familiar with elementary matters connected with the optical part of the photographic equipment.

The Appeal of the Picture

By F. C. Tilney. Illustrated. Price, $2.50 net. E. P. Dutton & Co., New York.

This book is the outcome of the experience of a painter who throughout his practice has made it a rule to examine the whys and wherefores of both the moral and material aspects of his art. The resulting thoughts and considerations have been put to practical test during some fifteen years in which Mr. Tilney has been also engaged in art-teaching and art-criticism. These critical and educational activities have been chiefly directed toward two entirely different classes of students—the scholar of the art school and the student of artistic or pictorial photography. The pictorial photographer knows little of traditions. He seldom has been through the art schools in his youth and generally comes to art from the outside, impelled by various motives. From the making of mere exposures he strugglingly arrives at the making of artistic pictures by photography. He cannot draw, but he comes occasionally to a full understanding. The section of the public that numbers him is a very small one, but its earnestness is amazing and its voracity for art technicalities and "tips" is insatiable. By the force of his zeal and the amenability of his predilections the pictorial photographer often becomes a much better artist than many an art student of the schools who has been pitchforked into his course of training, partly on the strength of some ill-judged childish attempt, and partly by the greed of the schools for scholars.

It is from both these classes that picture-makers come, and it is to both that this book is offered in the expectation that its arguments will prove profitable.

The Value of a Good Slogan

The value of a good slogan is being realized more and more by the enterprising, up-to-date, business man. It gives individuality and distinction and carries a building-up process which becomes a vital rallying cry.

We are all familiar with phrases such as, "You Press the Button—We Do the Rest" and the more famous "There's a Photographer in Your Town." These, through generous and persistent advertising, have built up a mighty enterprise, and the Eastman Kodak Company alone have done more to help the photographer by this means than he can possibly realize.

The great force of the slogan, be it remembered, is its repetition. It must be presented constantly and on every occasion. The Eastman Kodak Company have had many catchy slogans, which convey a true meaning but none more effective than this latest, which is to be advertised widely:

"Your Friends Can Buy Anything You Can Give Them—Except Your Photograph"

Just think this over, and you will see what a wonderful help it can be to *you*, and apply it to *your* studio. Begin now and use this slogan on every occasion, and in every manner, and watch the inevitable results.

There is no stronger arguments for the Easter trade and developing your own business than the value of this most effective of all slogans.

·BREVITIES·

Practical Articles in Leading Periodicals

Building up Extra Print Business—E. D. Cramp, Jr. February *American Photography.*

Balance of Light and Shade in Portraiture—Wm. H. Towles. January and February *Abel's Photo Weekly.*

Chemical Love for the Amateur Photographer—Wm. R. Flint. February *American Photography.*

Cinematography and Static Electricity—Chas. I. Reid. February *American Photography.*

Chemicals and the Photographer's Fingers—January 10th *Amateur Photographer.*

Enlarging for Professionals—February 7th *British Journal of Photography.*

Individual Backgrounds—Lee Defries. February *American Photography.*

Photographic Portraiture—Paul L. Anderson. January and February *American Photography.*

Pyro for Prints—January 4th *Photography.*

Preparation of Photographic Paper—January 12th *Bulletin of Photography.*

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To the Photographers of America

Gerhard Sisters, of St. Louis, enclosed their check in payment of dues to the Copyright League, and wrote the following letter:

"Enclosed find check $2.00 payment for one year's dues, Copyright League. We cannot begin to tell you how much the League has helped us, and incidentally how much money we have received from violation of copyrights. We are more than pleased in the manner Mr. Lewison, your attorney, handles these affairs."

Above letter is a typical one and will open the eyes of many to the benefit of Copyright and to the efficiency of the League.

The dues were made nominal, so as to be within the means of photographers in even the remotest places. They barely cover the cost of administration and the small salary paid to the counsel of the League for the services which every member may command of him.

Only a comparatively short time ago our pictures were considered fair and easy booty for newspapers and other publishers. Whenever they wished to use them, no questions were asked, no payment was given. *They just took them.*

They must indeed have thought photographers a sorry lot who, while they might have the brains to create good work, certainly had none to safeguard it for themselves.

The League has done good work in changing all this. It has successfully fought hostile legislation and has succeeded in obtaining a much fairer copyright law than we had before; but to be fully efficient in protecting your interests, now and in the future, it should have a much larger membership. Numbers spell Power.

I know that every genuine photographer is proud of his profession and wishes to see it respected and I ask you *all*, therefore, to join the League. Though your individual share in the good work may be small, the aggregate will show wonderful results.

Faithfully yours,

B. J. Falk,
President, Photographers' Copyright League.

The Buffalo Guild of Allied Arts

The annual meeting of the Guild of Allied Arts in the Guild rooms followed one of the most interesting seminars that has been given. The large audience listened attentively to Dr. Schwarcman as he told how the pigments, oils, and varnishes for artists and the dyes for textile manufacturers were made, and how the various colors were affected by gases or acids in the atmosphere.

The election results follow: President, Bryant Fleming; vice-president, Spencer Kellog, Jr.; second vice-president, John F. Grabau; third vice-president, Eugenia Hauenstein; treasurer, Wilbur H. Porterfield; recording secretary, Elsie Bradford; corresponding secretary, T. Hanford Pond; fourth vice-president, Carl K. Friedman.

During the election the honor of acting secretary *pro tem.* was given the oldest artist in Buffalo, but one of the newest members of the Guild, Harrison Mills, whose fifty-seven years of experience in Buffalo as a painter is unique.

The Camera Club of New York

The Camera Club of New York, No. 121 West Eighty-sixth Street, is having a very active and successful season.

Every Tuesday evening, which is our regular club night, entertainments have been given. In addition to photographic and musical offerings the club has had lectures by the following eminent artists: Henry W. Ranger, Elbert Dangerfield, J. William Fosdick, and Gus Bogart.

Exhibitions have been going on every month, and up to the present time our list includes such honored names as Perie MacDonald, Dudley Hoyt, Henry Wolf, and pictures by our fellow-member Mr. Edward Steichen. Later in the season we will have interchange exhibits and in addition to this we have advertised a competition for gold prizes of "regular and fake" pictures, which is only open for our members. Photographers, either professional or amateur, visiting New York City will be most cordially received at the Camera Club.

Committee.

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Fire Does Not Hamper Sprague-Hathaway Plant

The fire which occurred at Sprague-Hathaway Company's plant in West Somerville, Mass., on January 16, destroyed one-half of their four-story brick building and practically ruined the contents, entailing a loss estimated at over $60,000. In ten days' time they had moved into new quarters, equipped the plant with modern apparatus, and were doing business.

Their new location is only three minutes' walk from their old place of business. We understand the burnt building is to be rebuilt on modern plans and equipped with the latest and best apparatus for doing their special work.

Kathol—A Domestic Metol Substitute

Dr. C. J. Thatcher, a chemical expert of New York, is producing commercially a photographic developer which has almost the same composition as metol, and produces precisely the same photographic effects.

During the past year—since the war started—Dr. Thatcher has made extensive and costly investigations regarding the manufacture and use of photographic developers like metol, and has at last succeeded in overcoming the many difficulties encountered. His developer, which he has named kathol, has been submitted to extensive tests by photographic experts, including those of leading photographic concerns, and has been found to produce results identical with those formerly obtained only with metol. Kathol is being adopted by commercial photographers and motion-picture manufacturers; millions of feet of motion-picture films having already been developed satisfactorily with kathol, and exhibited publicly.

The resemblance between kathol and metol is so close, that a photographer can use his own developer formula, merely substituting kathol for metol, as no change in proportions is necessary, and parallel tests show that the same color, density, and contrast are obtained in the same time.

The United States Patent Office has granted Dr. Thatcher a patent for his developer, and other patent applications have been filed. Dr. Thatcher's factory, equipped to produce twenty-five pounds daily, has been in commercial operation for some time, but is already inadequate to supply the demand for the new developer, and will be enlarged.

"Trick" Photographs

Some remarkable "trick" photographs by Mr. J. E. Austin, F.R.A.S., F.G.S., appeared in the *Sketch* for January 12. Each scene depicted includes four or more figures, every one of which represents the same person, namely, Mr. Austin himself. For instance, one photograph shows a card-player playing against himself with his own "ghost" as accomplice, while asleep in another chair. The photography has been so cleverly carried out that the results are extraordinarily convincing.

Winners in the 1915 Kodak Advertising Contest

Class I.—First prize—W. B. Stage, New York. Second prize—Geo. J. Botto, New York.

Class II.—First prize—H. V. Roberts, Utica, N. Y. Second prize—W. B. Stage, New York.

Class III.—First prize—John Balbridge, Waldron, Mich. Second prize—James J. Ryan, Berkeley, R. I.

Class IV.—First prize—Julius Schabtach, Buffalo, N. Y. Second prize—John S. Neary, Trenton, N. J.

Class V.—First prize—Chas. E. Mace, Estes Park, Colo. Second prize—Percy DeGaston, Tropico, Cal.

Class VI.—Wm. Shewell Ellis, Philadelphia, Pa.

The Spirit of a Business

Go through the wholesale district of almost any large city and you will note that the architecture of a large proportion of the buildings belongs to an era that is past. No retailer could do business in these stores without extensively remodeling them. They are *passe*, and look the part.

The same thing is true of many stocks, and the man who fails to get the new goods while they are still new is liable to earn the reputation of being old-fashioned and unprogressive—a reputation that is fatal to money-making, once it is acquired. Initiative is the thing which is demanded more and more of the business man. It is up to you to supply ideas and to see that your clerks are of the type that use their gray matter.

Keep pace with progress. Do not let your competitors or the world itself get ahead of you. Read your trade journals and take two or three good magazines of business and system. Keep yourself thoroughly informed of the trend of business in the large cities nearest you. Study the windows of the big stores carefully and note the new things they contain that *you* might be selling to advantage.

Encourage reading among your clerks. Mark and ask them to read the particular articles you come across in your reading which you think might benefit them and give them ideas. Make them see that you are keeping in touch with the trend of events and appreciate ideas from them. Give real service, make prompt deliveries, work for the reputation of being a hustler. The spirit of a business determines its degree of success, and the spirit of your business ought to emanate from *you*.—*Coach*.

Date of the National Convention

The annual convention of the Photographers' Association of America will be held at Cleveland, the week of July 24. Announcements will be made later.

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THE WORKROOM

By the Head Operator



WORKING AGAINST TIME
PYRO-SODA TANK DEVELOPER
PEN-AND-INK DRAWINGS OVER PHOTOGRAPHS
THE SAVING OF RESIDUES
A ONE-STOP SYSTEM FOR COPYING
VARIOUS TONES ON P. O. P.
COPPER BROMIDE INTENSIFIER
A MOUNTING METHOD FOR V.-P PRINTS
METABISULPHATE AND ACID AMIDOL
AVOIDING HALATION WITHOUT BACKED PLATES
PHOTOGRAPHING COINS
PHOTOGRAPHING FINGER-PRINTS
ECONOMY IN HYPO
INTENSIFICATION WITH CHROMIUM
PYRO FOR BROMIDE PRINTS
FIXING AND WASHING ROLL-FILMS
IF I WERE A PHOTOGRAPHER
SOAP FLATTING

WORKING AGAINST TIME

MOST professionals are faced now and again with the problem of getting out work at a few hours' notice. Taking photographs for the press nearly always means a rush, especially for the provincial photographer when he makes his exposures during the afternoon and has to get his prints off by the evening mail. Then again, photographs are sometimes wanted in a hurry to produce as evidence in the law courts, especially in cases dealing with ancient lights.

It is usual at such times to dry the negative with methylated spirits, then print in bromide, and, when the prints have had a short washing, to dry them in the same way. But it is really much quicker to make bromide prints from the wet negative, after it has had a rapid washing, say, in nine or ten changes of water. When a little care is used there is practically no risk of spoiling the negative by this method.

After the negative has had sufficient washing, put it in a dish of clean water. Next lay a sheet of bromide paper in the same dish and let it soak until it is quite limp; press the surface of the paper against the film of the negative, under the water in order to avoid airbells, in the same way as you would transfer a carbon print from an opal temporary support to the final base. Now lift the negative with the paper in contact from the water, and lay them, paper side uppermost, on a large sheet of glass or a perfectly flat board; lay over them a sheet of blotting paper folded in two, and run over very lightly three or four times with a roller squeegee. The next step is to lift the two very carefully and lay them down again on the same glass or board, this time with the glass side of the negative uppermost. Wipe all water or markings from the glass of the negative with a clean duster.

Everything is now ready for making the exposure. For this there is no need to put the negative and paper into a printing frame; the paper is in perfect contact with the negative and moving the two into a frame would only mean a risk of shifting the paper or of damaging the soft film of the negative. The best way to make the exposure is to hold a lighted taper or wax vesta about five inches above the negative. The exposure, with a negative of average density, will only be about six or eight seconds, if a bromide paper is used. The taper or vesta, of course, should be moved about in order to expose the paper evenly.

After the exposure, again put the negative and paper into clean water, and strip off the paper. The print can now be developed in the usual way.

After fixing, the prints should have about ten changes of water. They can then be well blotted and put into a dish of methylated spirits, and allowed to soak for from five to ten minutes, or until the image is visible through the backs of the prints. When taken out of the spirits they should be well pressed between sheets of dry fluffless blotting paper and then dried over a gas ring or in front of a fire.

It is not wise to attempt more than six prints from the same negative by this method, because, by the time you have printed that number, the film of the negative will have become so tender that it will not be safe to risk any more copies. If more are wanted the negative should be hardened in an alum bath.

If the negative is valuable and likely to be used again, it should be put back in the fixing bath and afterward thoroughly washed in the usual way.—*Professional Photographer.*

PYRO-SODA TANK DEVELOPER

THIS developer will be a great help to the professional who works with Eastman Portrait Film. Its outstanding advantages are excellent keeping qualities and the production of remarkably clear negatives. The essential principle of the formula is the use of neutral sulphite. This is prepared in the manner originally published in the *British Journal of Photography.*

To every eight parts of sodium sulphite dissolved in hot water is added one part of potassium metabisulphite, and the resulting mixture boiled for at least five minutes.

Formula

Pyro	2 oz.
Sodium sulphite (crys.)	20 oz.
Potassium metabisulphite	2½ oz.
Sodium carbonate (crys.)	7½ oz.
Water to	280 oz.

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The following instructions must be strictly followed as the keeping qualities of this developer depend entirely upon the method of making up:

Dissolve the sulphite in 60 ounces of hot but *not* boiling water. When dissolved, add the metabisulphite and then boil for five minutes. Cool down to about 70° F. and add the pyro. Dissolve the carbonate in 20 ounces of warm water. Pour these two solutions into the tank and make up to 280 ounces with water. The most satisfactory temperature for developing is 65° F. and it should not be used below 60° F. When the developer is first made up, the time of development at 65° F. is about eighteen minutes.

After the developer has been used for some time, it will be found advisable to strengthen it. There are two methods of strengthening, both of which are satisfactory, and the photographer can use the one he finds more convenient. The strengthening solution is made by dissolving the chemicals given in the formula exactly in the way described, but only making up to 120 ounces with water.

The first method of using it is to add a small quantity of this concentrated developer after every batch of plates. When using the second method, wait until the original developer begins to work too slowly. Then pour half of it away; add 60 ounces of the concentrated strengthening solution and make up to the original bulk with water.

An acid fixing bath should always be used.

Pen-and-Ink Drawings over Photographs

It is sometimes desirable to make pen and ink drawings for reproduction. While etchings from line drawings are not considered superior to half-tone plates, they often serve the purpose better, especially where cheap paper is used for printing. Then, too, there is a difference in the price of the plates, say about 7½ cents per square inch for zinc etchings, and 15 cents per square inch for half-tones.

Aside from the commercial use of the pen-and-ink drawing, it makes a nice decoration when properly mounted and framed. The snap in a pure black-and-white pen drawing is hard to equal in other processes. Those who wish a variety in their home decorations may try inking-up one of their favorite scenes. It takes the ability of an artist to originate or sketch a subject, but it is not so difficult to go over with light and shade a photograph or silver print that gives the outline.

The first thing to consider is the choice of paper. If gas-light paper is used there is a variety of surfaces to choose from. Most varieties are all right except the glossy finish, which has too smooth a surface for the ink to adhere to, and when the original image is bleached away it will wash off. What is known as "silver print" paper is used more than any other kind for this class of work. It is a sensitized Sachs paper, the making of which is not a part of this article, but it can be obtained at most photo supply houses. Blue-print paper is also used and is suitable, if the paper stock is of good grade. What is known as "negative" paper, made by blue-print manufacturers, is also good and is made on good stock. This gives a variety of paper that can be used, and one may use the paper most suited to his taste and convenience.

The pen can be most any fine-pointed pen, but a drawing pen is the best; it is not as stiff as a writing pen. Gillott's No. 290 is a good one for fine work.

The ink must be of the water-proof variety so it will not wash off when the silver print is being bleached. Higgins' water-proof India ink seems to be the best. A general drawing ink that is not water-proof is also supplied, and the two should not be confused.

Before starting to ink the photograph it should be thoroughly cleaned with a wad of cotton slightly dampened, and if this does not cut the grease, a little ox gall, dissolved in water, will do the work. Another method is to rub saturated cotton on a cake of gelatin, then on the photo. If the photo is not greasy, all this trouble is unnecessary, and it is not required on silver and blue-print paper.

Starting to ink-up the picture, we must consider the light and shade, and cover it with lines to equal the values of the original picture. This will mean that the shadows, in proportion to their density, will need more and heavier lines than the high-lights. The kind of line or technic is a matter of choice, and depends on the skill of the individual to handle a pen. Every pen artist develops a style of his own, which is developed with no small amount of practice and hard work.

The best method for a beginner is to get a good pen drawing, study the lines used and use similar ones. When making drawings for reproduction by zinc-etching, the drawings should be made at least twice the size of the desired plate, and the lines should be kept a little coarser to allow for reducing.

When making a drawing merely for decoration purposes, a much finer line may be used, and it will have more the resemblance of an etching, especially if a sepia ink is used.

It must be remembered that before the original photograph is bleached away the ink lines will look much darker than they really are, and when the bleaching solution is used the drawing will lighten up considerably; therefore, enough lines must be used to retain the original values in the photograph.

After the print is inked-up and is thoroughly dry, it is ready for bleaching, which is a very simple process, similar to bleaching a print before redeveloping. A piece of cotton is saturated with the bleach and gently flowed over the print until it becomes white and there is none of the original image left. Although the ink is water-proof, care must be taken not to rub it too much or it might loosen up and come off. After bleaching, the print is thoroughly washed and dried.

Various bleaches may be used, but the following are in general use:

For prints on the regular gas-light paper, use 2 drams of saturated solution of iodine and 2 drams of saturated solution of cyanide of potassium diluted with water. Wash after

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the bleaching. This latter chemical is a deadly poison, so one must be careful when applying it.

For silver print and negative paper, a saturated solution of bichloride of mercury is all that is needed. Wash after the bleaching in water slightly acid. Any alkali will restore the image.

For blue print paper a fairly strong solution of common bicarbonate of soda bleaches very nicely. Carbonate of soda will work, but it turns the paper yellow.—S. H. AVERY in *The Camera.*

THE SAVING OF RESIDUES

WHEN we consider that only about 5 per cent. of the metallic silver used in the production of a photographic image remains in the finished print, and perhaps a slightly higher proportion in a negative film, it is obvious that during a year metal to the value of a good many thousands of dollars goes down the sink and is practically lost forever. To those who spend any considerable sum of money upon plates or paper the recovery of as large a proportion of it as possible is a consideration, but it is often lost sight of either through laziness or ignorance. The first point to be considered is the annual expenditure on plates and paper; if this be small there is nothing to be gained by attempting to save residues, for the labor involved will more than cover the amount realized by it.

The fixing baths used for plates and papers receive the greater proportion of the silver used for the emulsion, and if it be determined to save the residues the used hypo solutions have first to be considered. These should all be emptied into a sound cask—those in which petroleum comes to this country are very suitable—until the cask is nearly full. Then a pound or so of liver of sulphur should be dissolved in hot water, poured into the cask, and well stirred. After a couple of days an ounce or two of the clear liquid should be taken from the top of the cask and tested with a little liver of sulphur solution. If a precipitate be formed, more or the same solution should be added to the cask, as there is still silver in solution. If, however, no precipitate is shown the clear liquid may be drawn off by means of a tap, spigot, or siphon, and the cask left ready to receive more fixing baths. This should go on until there are three or four inches of sludge in the bottom of the cask. This has to be scooped out, well drained, and sent to the refiners. We may here caution the beginner in this class of work not to expect an extravagant return of his sludge. In the first place, it is not pure silver but a silver salt. In the second, there is a certain amount of ordinary dirt in it; and thirdly, it holds a rather large percentage of water. The preliminary washings of P. O. P. and self-toning papers may be added to the hypo baths, but if this be done only a small quantity of water should be used, or the cask will be filled with a lot of unproductive water.

Other sources from which silver may be recovered are waste prints toned or untoned, print trimmings, and particularly the films off old negatives and spoiled plates. These latter should be dissolved off in hot soda solution, and the silver when settled added to the old hypo baths. Paper residues are best treated by burning. Every bit of untoned paper should be reserved, and, when an opportunity occurs thoroughly burned so that the ashes will occupy as little space as possible. The trimmings of toned prints are hardly worth saving, but may be burned and the ashes added to those obtained from untoned paper, etc.

Gold residues were formerly of importance, but in these days of bromide and gaslight papers, together with the fact that self-toning papers are coming more and more into commercial use, they are almost negligible. Where separate toning and fixing are practised, all used gold baths should be poured into a separate receptacle, and the gold precipitated by means of a strong solution of sulphate of iron.

The average photographer will do well to be content with sending his savings to the refiners. Some workers we have known have installed a furnace with crucibles, etc., complete, but this is hardly worth while. The biggest photographic concern in the world finds it cheaper to send its residues to the refiners to be smelted, so that smaller ones may well follow in the same path.

Although not strictly ranking with residues, just now—but let us hope only for a short time—all glass plates have a greater value than they have had for many years. Cleaned glass, from postcard size upward, will be gladly purchased by picture-frame makers, or the regular dealers in old negatives will give a better price for them than they have done for long past. When the Belgian glass works start again glass will be cheaper, and possibly the price of dry plates will fall; meanwhile we should do what we can to get some return on our old negatives.—*British Journal of Photography.*

A ONE-STOP SYSTEM FOR COPYING

EVEN when one has standardized one's conditions in copying as far as possible there are always the two varying factors of "original" and of "camera extension" (that is, of relative lens-aperture), which govern exposure. While the former can be to some extent classified, the latter is generally a puzzle which reference to tables of magnification, etc., does not always solve satisfactorily. It is as likely as not the operator's mental arithmetic which is at fault as the rule or table, but the result is inaccurate, whichever the cause. Besides that, one sometimes uses a different lens or a supplementary one for a special case, and then trouble is almost sure to occur.

To obviate all the difficulty one need only adopt one definite stop for all cases. This should be the largest aperture with which any of the lenses used will cover sharply. All the lenses are then stopped down to the same *actual* diameter of opening, and the stops or diaphragm rings marked so that the same size opening can be got instantly at any time.

The size of the opening can be found by unscrewing the glasses and pushing a pointed strip of card through the diaphragm, then marking the card where it touches, the other lenses being adjusted close to the line on the

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card. One then gets a straight lath and marks along it spaces exactly the same as the diameter of the stop chosen. These units are then numbered from one upward just as a foot rule.

Having made this simple instrument, the exposure problem will practically vanish "once and for all." This is how to apply it: Having focussed sharply the lens is stopped to the particular aperture arranged. All that remains to be done is to measure the extension of the camera with the prepared rule and the number of units extension is necessarily also the actual *f*/ number. That is, if the extension measures twenty-two units on the rule, the lens is working at *f*/22, whichever lens or combination may be in use.

It is a still further advantage if an exposure table is worked out on a piece of paper for a normal copy. Having obtained correct exposure for, say, *f*/22, one multiplies and divides for other apertures in the usual way, but, then, for this work adding a little "for luck" as the *f*/ numbers go up, and subtracting also as they go down. "There's a reason," as the advertisements say. If the exposures for each stop are then marked on the rule, against the usual *f*/ numbers, the correct exposure for any extension can be read off without any calculation beyond multiplying or dividing by the factors for various kinds of original.

The apertures which theoretically double the exposure in turn are as follows:—*f*/4, 5.6, 8, 11, 16, 22, 32, 45, 64, 90, 128, 180, 256, 360. Intermediate figures can be marked with the corresponding exposures with quite a sufficient degree of accuracy when these have been worked out.—*British Journal of Photography.*

Various Tones on P. O. P.

Heightening the tones of prints by the employment of the thiocarbamide bath is a process which readily adapts itself to all varieties of printing-out papers.

The prints must first be washed until all acid reaction in the wash water is stopped, and it is advisable to add to the final washing a little common salt.

Make a solution of a 2 per cent. strength of this thiocarbamide, and of the ordinary gold chloride (1–100).

To 25 xxm. (6 drams) of the gold solution add just sufficient thiocarbamide solution until the first-formed precipitate is redissolved. Then add 10 grains of citric acid or 1 drachm of acetic acid, and make up the contents with water to 34 ounces, adding finally 150 grains of common salt.

Tones may be obtained as follows:

Sepia. Let the print remain in the bath containing acetic acid for about fifteen minutes.

Brown to brown-black tones. First place in a 5 per cent. solution of common salt until the image is yellowish brown, then transfer for fifteen minutes to the thiocarbamide bath containing acetic acid.

Platinum black tones. Immerse for four minutes in the citric acid thiocarbamide bath, then ten minutes in a platinum toning bath.

Blue violet tones. Immerse for ten to fifteen minutes in the citric acid thiocarbamide bath.

Blue Brilliant tones. Increase the amount of citric acid in the above bath to 20 grains. Wash well, keeping the temperature of the wash-water the same as the bath. When the proper tone is reached, wash well and fix in a 10 per cent. solution of hypo, and finally wash.—*Photographie fur Alle.*

Copper Bromide Intensifier

A Callier gives the following precautions for the use of this intensifier with gelatin plates. After bleaching in

Copper sulphate	25 gm.	½ oz.
Potass. bromide	25 gm.	½ oz.
Water	1000 c.c.	20 oz.

the negative is passed through three or four baths of acetic acid 1 ounce, water 50 ounces, remaining in each for about five minutes. The last bath, when poured into a measure and ammonia added, should become only very slightly blue: it will always show some blue owing to the cuprous bromide of the image being slightly soluble.

The negative is then soaked in distilled water and placed in the darkening bath of silver nitrate ¼ ounce, water 12 ounces.

After a further short washing in distilled water, the negative is placed in a weak solution of common salt. This bath precipitates the excess of silver nitrate, and thus avoids brownish fog or stain in the negatives.

The silver chloride formed may be dissolved in 10 per cent. solution of sodium sulphite and finally re-developed, preferably with amidol, and in full daylight.

The process gives great intensification, and very little enlargement of the grain. Thus, fine transparent lines are not choked up, and the process is intended for negatives of line subjects. —*Bulletin Belge.*

A Mounting Method for V.-P. Prints

Many users of vest-pocket kodaks, and other small cameras make contact prints from the negatives, these being in themselves large enough to be interesting, and though the primary purpose of the small negative is the production of enlarged prints, these smaller specimens may be little pictorial gems, and their producers have not the heart to burn or throw them away. The writer has for some time adopted the following method of mounting and storing these minor productions of photographic work. The prints are simply mounted in small numbers on a fairly stout piece of 10 x 8 mounting paper. A sheet of this size will generally accommodate about twelve small contact prints. The prints should be pasted on to the paper, grouping them as well as possible, having all in the same process on the same sheet, in order not to cause any lack of harmony through colors clashing. The sheet should have a sheet of pure white blotting paper laid over its face, and be placed under pressure for some hours. When removed each print will be found to be perfectly flat upon the

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mount. A number of these sheets may be stored in a portfolio. The above method offers one advantage when the prints are being viewed, as each individual print does not have to be held in the hand, and the beholder does not lose any part of the picture as when so doing. Each print is presented perfectly flat, and apparently gains in the matter of size in this way.—*Amateur Photographer.*

Metabisulphite and Acid Amidol

When the amount of alkali in the formula for a developer is closely adjusted to the requirements of the developing reagent, as, for example, is necessarily the case when caustic alkalies are used as the accelerator, and in all methods of development by time, it is important to note that a very slight addition of metabisulphite may affect the development to an extraordinary extent.

To give an example: There is a standard formula for metol which gives—metol, 1 grain; sulphite, 10 grains; potassium carbonate, 3 grains; water, say, 1 ounce. It will be found that the addition of one grain of matabisulphite to this acts as a powerful restrainer; not like potassium bromide, but in a contrary manner, giving a result thin all over, and holding back the denser deposits apparently in the same, or even in a greater ratio than the more delicate ones. If, however, a further two grains of potassium carbonate are added, together with the one grain of metabisulphite, the effect of the latter is neutralized, and the developer acts in all respects similarly to the normal developer containing three grains of the alkali. This property of metabisulphite may be taken advantage of in developing negatives for enlarging, provided the effect of the metabisulphite is known and allowed for.

As a further illustration, we may take the case of acid amidol, which is normal amidol with some of the sulphite replaced by metabisulphite or other acid sulphurous compound. The result is a slowing of development and a probable slight flattening of the gradation, which, by experiment, may be seen to occur exactly in the same way as with metol developer and metabisulphite. Further, the effect of the sulphurous acid in the amidol may be entirely corrected by the addition of more normal sulphite, just as the metabisulphite was corrected by the addition of more alkali in the case of the metol developer.

The stock amidol mixture which I described recently in *Photography and Focus* is strongly acidified with sulphurous acid. Three drams of this mixture with five grains of added sulphite give a weak and rather flat result; the same with ten grains of added sulphite works with vigor rather under the normal; with fifteen grains of sulphite its action is full and vigorous. It will thus be seen that ordinary acid amidol which is only slightly acidified may be very much altered in character by very slight variations in the amount of sulphite as well as of the acid compound it contains.—T. H. Greenall, in *Photography.*

Avoiding Halation Without Backed Plates

It sometimes occurs (on holidays in out-of-the-way places, for instance) that backed plates are unobtainable. Halation, however, can be easily avoided by the simple expedient of loading the slides with the plate's glass side toward the lens.

Halation is due to excessive high-lights being refracted or thrown back upon the sensitive film from its glass support. The thicker the glass the more pronounced the evil. Films, for this reason, are less prone to halation than plates.

Let us examine, briefly, the disadvantages of using the plates reversed as suggested. The principal one is that it yields a reversed image, *i. e.*, objects on the left hand in the view appear on the right in the print and *vice versa.* This is not always an objection, in fact it may be a positive advantage in some printing processes, such as the single-transfer carbon process. In enlarging, too, it is only necessary to reverse the negative in the enlarger to correct the position of the image in the resulting print.

Another difficulty (insurmountable in the case of fixed-focus cameras) is that the film of the plate is brought slightly out of focus to the extent of the thickness of the glass, and this must be rectified by racking the lens in toward the plate about one-sixteenth of an inch after the image has been sharply focussed. A test exposure should be made, however, before relying on this for all plates.

Care must also be taken, when loading the slides or sheaths, to avoid scratching or damaging the sensitive surface of the film. And if the slides are of the old-fashioned type, containing springs which normally press against the glass of the plate to force it up to the rebate of the slide, it is desirable to interpose a piece of thin black card or stout paper.

Taking the picture through the glass may possibly necessitate a slight increase in the time of exposure, though with the ultra-rapid plates now in general use this is negligible. In the case of very slow plates, such as "process," it might be as well to allow an additional 10 or 15 per cent. in this direction.

With these simple precautions duly observed this little dodge will be found extremely useful in emergency.—*Amateur Photographer.*

Photographing Coins

Dr. E. Demole comments upon the usual method of obtaining good photographs of coins and medals—that is, to take a cast, color, and photograph it. He suggests the following method: Place the coin or medal between two sheets of white glazed card, which should be very thin, and damped. The whole should then be placed between two pieces of thick felt and then subjected to strong pressure in a copying press. After a short time the impression of the coin is perfect. The impressions should then be lighted from one side and photographed not on to a plate, but onto smooth, glazed, bromide paper. The result is a negative which is rather weak, but the reversed lettering is again reversed

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in the negative, and the side lighting having left the surface in comparative shadow, the face of the medal remains white or gray, as though all those parts in relief had not been illuminated, while the illuminated parts remain black. The result, although a negative, has all the characteristics of a positive. The lighting is certainly a little strong and unnatural, but it is quite sufficient to give all the necessary details of the coins. The real negative is, of course, the impression on the paper, and the negative made by the lens is the positive. The catalogue of the coins of the Numismatic Society of Geneva, which number some thousands, has been illustrated by this process.—*Rev. Suisse.*

Photographing Finger-Prints

H. Nolan gives the following methods of service when photographing finger-prints taken upon different surfaces:

1. Finger-prints in dust.

(*a*) On colorless glass; illuminate by transparence with oblique light; dark background.

(*b*) On dark surfaces (a very easy subject); illuminate by direct light.

2. Finger-prints in grease (ordinary finger-prints).

(*a*) On light surfaces, such as china plates, dust on (dry) very fine graphite powder; blow off with bellows, etc., *not with breath.* The "dusting on" is best effected by charging a heavy, flat-ended, camel-hair brush with the powder, holding it near the surface and jerking it by a blow on the hand which is holding it.

(*b*) On dark surfaces, such as the black or green paint of a safe, mahogany furniture, etc.; treat similarly, using fine, dry, white-lead powder.

(*c*) "Invisible" finger-prints on paper. Develop with aqueous solution of silver nitrate (5 to 8 per cent.).

3. Finger-prints in blood on dark surfaces (*e. g.*, black bottles). In dark-room illuminate by direct rays of arc or magnesium light, preferably concentrated. One may get reflections, but the pattern of the papillary ridges will stand out clearly.—*British Journal of Photography.*

Economy in Hypo

Hypo in the past has been so cheap that there has never been any great inducement to economize in the use of it; and indeed it has not been fully recognized how hypo should be used in order to extract the full value from it. Now the disturbance of supplies and the occasional large demands upon the existing supplies of hypo for military purposes make it advisable to keep before us the most efficient way in which to employ fixing baths for prints and plates. There is no need to endanger the permanency of either negatives or prints by incomplete fixing. I was told the other day by a gentleman in the photographic trade, that photographers generally could effect a reduction of 30 per cent. in the consumption of hypo without any impaired result therefrom as regards permanency. The causes of fixing baths becoming "used up" and of no further service for plates and papers are twofold: The hypo itself becomes converted into the double hyposulphite compound of silver and soda, and so ceases to exercise any dissolving action upon the silver bromide in an emulsion; also the baths become so stained by developer finding its way into them that it may be necessary to discard them for fear of stained plates or prints, even while the amount of hypo in them is sufficient for fixing a considerable further number of negatives or prints.

Therefore, one of the first directions in which economy can be effected is to avoid staining the fixing bath—that is, to avoid carrying developer into it. In the case of negatives it is a simple matter to provide a grooved tank in which plates can be given, say, five minutes' soak in clean water before being placed in the fixing bath. That will soak most of the developer out of the film, and each plate can be given a moment's rinse under the tap before being transferred to the fixing bath. If a considerable number of negatives are being handled, it is advisable to change the water in the tank, say, after the introduction of every sixth negative. Better still, if the dark-room facilities allow of it, is to put the negatives in a tank through which a moderate stream of water can pass.

In the case of bromide prints one can follow very much the same plan, but it is necessary to keep the prints out of accidental exposure to white light while receiving this brief wash before fixing. The objection to washing in this way is that unless prints are kept moving about freely in a considerable bulk of water the action of the developer may go further, resulting in prints which are darker than intended. As a preventive of this I would suggest the use of a stop bath, such as one consisting of a solution of soda sulphite, 1 ounce in water 20 ounces, made distinctly acid by addition of acetic acid to the amount of, say, 2 or 3 drams. This bath will stop development, will allow the developer to dissolve out, and at the same time will not have any injurious effect upon the fixing bath when small quantities of it are carried into the fixer by the prints.

With gaslight prints quick and ample fixation is necessary in the case of many brands of paper in order to avoid stains. Hence, washing such prints in plain water before fixing is not a plan which can be recommended. Without having tried it, I should think that the sulphite-acetic stop bath would serve satisfactorily in the case of most gaslight papers.

Ample treatment of the prints with the bath which is in use is a further means of economy. The longer a bath is kept in use the slower its fixing action becomes, and therefore the greater necessity of exposing prints freely to the solution. The old practice of drawing prints in succession from the bottom to the top while the batch lies in the hypo bath is one which might be made an invariable rule at the present time. Another cause of wastage of hypo is too cold a solution, which again reduces the activity of the hypo baths. A temperature of 65° is as low as should be used.

In what I have written above I have had in mind only bromide or gaslight papers. I think we can dismiss for the moment P. O. P., of which apparently very little is now being used. This

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being so, the last point to bear in mind is that a fixing bath for papers, whether of the plain or acid type, is one which serves equally well for negatives. A rule can therefore be made to keep all baths which have been used for fixing prints and further employ them for plates. Obviously it is better to let plates have the more exhausted baths, since with the emulsion on a glass surface it is easy to tell when the silver bromide has been fully dissolved out. As has been so often insisted, it is good practice to keep the plate in the fixing bath for about as long again as is required for the "white" of the emulsion to disappear. In doing this, it is a good plan to transfer the plate to a second bath, which preferably should be one which has been less used than No. 1.—*British Journal of Photography.*

Intensification with Chromium

C. Welborne Piper and D. J. Carnegie find that considerable intensification can be obtained with potassium bichromate solution followed by redevelopment. The plate is bleached in the A, B, or C solution given below, according to the degree of intensification required. B gives results almost exactly equal to those obtained with mercury and ferrous oxalate. The effect of A compares with that of mercury and ammonia; that of C with mercury and sodium sulphite.

	A	B	C
Potassium bichromate	5	10	10 gr.
Hydrochloric acid (sp. gr. 1.160) . . .	1	5	20 min.
Water to	1	1	1 oz.

Solution A should be made with distilled water.

The more acid the bleaching solution, the weaker the intensification, and to obtain the strongest effect it is necessary to reduce the relative quantity of acid, and to dilute the solution. Adherence to exact formulæ is necessary for constant results. As soon as the plate is completely bleached, *i.e.*, as soon as the last tinge of grayness has disappeared from the front (a change which is easily observable as the plate lies in a porcelain dish), the plate is removed. After washing out the bichromate stain in water —time, ten to thirty minutes—the image is redeveloped in:

Amidol	5 gr.
Sodium sulphite, 10 per cent. solution	1 oz.

In place of the rather lengthy washing necessary after the bichromate, the plate can be rinsed once or twice for an instant only with a 2 per cent. solution of metabisulphite. The solution must not be stronger, nor used for a longer time, or there will be great loss of density. With solution B and amidol as the redeveloper, the process of intensification can be performed repeatedly. Two successive operations give the intensification usually obtained with mercury and ammonium sulphide. Sodium bichromate is not found to be so suitable as the potassium salt.

Water is the safest eliminator of the yellow stain but, if used as described, no risk is run with metabisulphite, which is the best chemical destroyer of the bichromate, and does its work in about two minutes.

Amidol is preferred as a developer because it is powerful and rapid in its action, and is only faintly alkaline. Any strongly alkaline developer, if applied several times, produces frilling sooner or later, but if a reagent other than amidol is to be used, glycin, without bromide, and with sodium instead of potassium carbonate, should be chosen. Either of these two gives full density in less than five minutes, whereas hydroquinone requires ten to fifteen minutes.

The B solution should be used for repeated intensification. The results appear to be perfectly permanent, and the process is always easy, effective, and safe, and can be used for black-tone lantern slides, the tone of which it preserves.

In dealing at length with the theory of the process, the authors prove that the intensified image contains chromium, probably in the form of Cr_3O_4. The actual bleaching agent is very probably $KClCrO_3$ (potassium chloro-chromate), which, acting on the silver image, produces a protochloride of silver.—*Amateur Photographer.*

Pyro for Bromide Prints

Bromide paper can be developed with this to yield pure black-and-white prints. The paper employed (says the editor in *Photography and Focus*) was Wellington platino-matt; and after a number of trials it was found that a solution made up of equal parts of the stock carbonate-sulphite solution and water, to each ounce of which mixture one grain of pyro was added, made the best working strength. No bromide whatever proved necessary, the unexposed parts keeping perfectly free from veil, even when the development was prolonged. The prints after development were rinsed for a moment in plain water, and were then fixed.

There was a marked difference between, say, the usual amidol developer and this pyro solution in use. Amidol can be used over again several times, the action gradually getting slower and the color of the prints more greenish. With a pyro developer there is not much alteration in color, but the action speedily slows down. Four ounces of solution were made and whole-plate prints developed, pouring the whole four ounces into the dish each time. The first print was developed in three minutes, the second in a little over four, and the third took eight minutes, and the fourth at the end of half an hour was still unfinished. Apparently the developer was exhausted, and so the print was rinsed and developed up to full depth by applying some fresh solution.

Those who have been deterred from using pyro for prints because of its reputation for staining will be interested to learn that this last print was as free from stain as its predecessors. It was a little less vigorous and slightly greener in color before toning, but now that it is toned there is little or nothing to distinguish it from the others. The developer at the finish was only slightly discolored.

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Fixing and Washing Roll-Films

To those who develop any quantity of roll-films, a simple and convenient method of preventing the films from curling while fixing and washing, without the need of continually watching them, may prove of great service.

Here is the method I employ: For fixing and washing I use deep porcelain dishes, size 15 x 12. This sized dish will take nearly all films of the popular sizes of folding pocket cameras, but smaller dishes may be used to meet individual requirements.

After developing—which I do by hand—the film is washed in a dish of clean water and the clips released. The two ends of the film are brought together, so that the sensitized side is facing outward. This will form a loop between the third and fourth exposure (six-exposure reel). Note these exposures, and along the space between them gently squeeze the film so that a flat edge is formed, the exposures coming back to back flatly.

Adjust the ends of film while holding exposures Nos. 3 and 4 firmly, so that 2 and 5, and 1 and 6 lie evenly against each other.

When this is done, grasp the ends firmly and release what was previously the centre. Pin the ends together on the blank unexposed portion. The tendency of the film to curl outward is thus counterbalanced, and the film lies firm and flat, which ensures, with a little periodical attention during fixing, thorough fixation, and a minimum of trouble while washing.

Twelve-exposure films are dealt with in sixes; with eight-exposure films (V. P. K.), the four and five exposures become the centre, and larger-sized films are dealt with, cut in fours or twos.—A. L. R., in *British Journal of Photography.*

If I Were a Photographer

I would distribute cards shaped like photographic mounts. In each one would be pasted, instead of a picture, a mirror; and under the mirror this text would appear:

"Bring the good-looking picture you find in this glass into our shop, and we will exchange it for twelve identical copies—just as good, if not better—for twenty-five cents apiece."—E. S. Brandt, in *System Magazine.*

Soap Flatting

This very useful background paint is usually mixed in a rather haphazard fashion; the following instructions will probably be welcome to many. Lamp black, white lead, and venetian red ground in as little oil as possible are mixed to the desired shade and diluted to the consistency of ordinary paint with turpentine. Now shave one ounce of good yellow soap into six ounces of boiling water. When dissolved bring to the boil and mix with a pound and a half of the paint, stirring until thoroughly incorporated. When cool it is ready for use. This dries quite dead, and will not crack or rub.—*B. J. of P.*

"Photography," says Ruskin, in *Arata Pentelici*, "cannot exhibit the character of large and finished sculpture, but its audacity of shadow is in perfect harmony with the more rough picturesque treatment necessary in coins." This remark is particularly noteworthy by reason of its picturesque phrase, "audacity of shadow." If one takes the trouble to analyse the memory of those pictures which cling to the mind or those which first seize our attention on the first walk round a photographic exhibition, it will in very many instances be observed that it is their audacity of shadow that leaps to the eye. Nature is here so much bolder and braver than is the invention or imagination of man.

PATENT NEWS

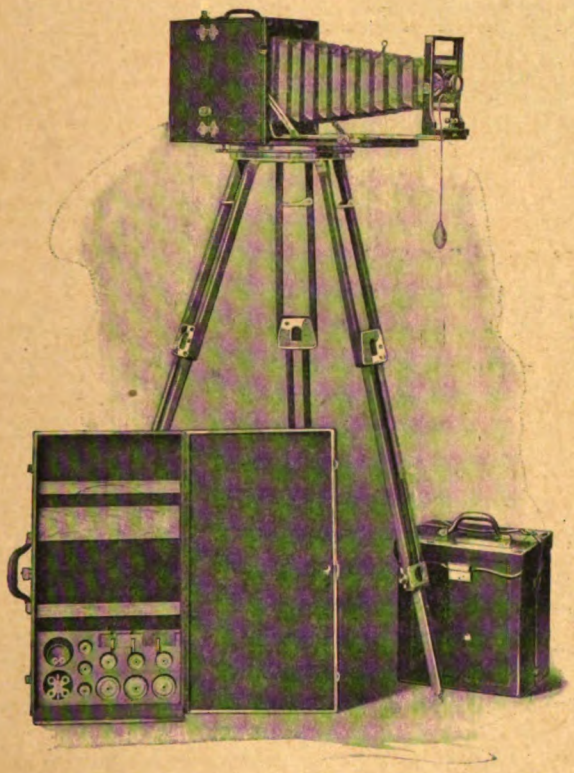
Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Levelling finder. F. D. Anderson. 1167967.
Camera. S. Zacharia. 1168140.
M. P. device. E. E. Maggard. 1168086
Printing frame. R. Cilley. 1167795.
Printing machine. E. A. Thorberg. 1167857.
Half-tone screens. W. R. B. Larsen. 1167505-6.
M. P. fire trap. Mehl & Lievler. 1167583.
Automatic slide changer. M. M. Gillam. 1167399.
M. P. projector. Stineman & Taylor. 1167854.
M. P. projector. W. B. Featherstone. 1167643.
M. P. projector. W. H. Anderson. 1168991-3.
M. P. developing apparatus. J. E. Thornton. 1169096.
M. P. perforator. J. E. Thornton. 1169097.
M. P. in colors. J. E. Thornton. 1169098.
Film printing and developing. G. C. Beidler. 1168466.
Treating films. J. I. Crabtree. 1168286.
Automatic printer. P. A. Triedell. 1168622.
M. P. projector. D. D. Daniell. 1168607.
Supplementary lens. G. Mengel. 1169731.
M. P. apparatus. S. B. Austin. 1168376.
M. P. in colors. F. E. Ives. 1169161.
M. P. projector. W. C. Martin. 1169176.
M. P. film clamp. C. F. Woods. 1169222.
Opaque projector. W. L. Patterson. 1169786.
Stereo apparatus. G. A. H. Kellner. 1169163.
Camera. C. & W. Thoma. 1170364-5.
Portable camera support. R. H. Denman. 1170422.
Shutter release. M. J. Barnett. 1170473.
Film back. A. & J. Belanger. 1170039.
Film winding key. C. F. Speidel. 1169882.
M. P. photomicroscope. W. Loew. 1169843.
M. P. film feeder. F. E. Artz. 1169758.
Film storage safe. G. F. Brown. 1170043.
Focussing device. A. Wollensak. 1170206.
Camera. I. 3. Webster. 1170028.
Shutter. A. Wollensak. 1170207-8.

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THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII APRIL, 1916 NUMBER 4



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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII APRIL, 1916 NUMBER 4

THE MAN BEHIND THE CAMERA[1]

By LEWIS EDWIN THEISS

PHOTOGRAPHS are like figures: they never lie. Moreover, they give us in one quick, comprehensive glance an accurate idea of a situation that columns of words cannot convey, thus adding accuracy to the saving of time. Hence in this busy modern world of news gathering and news reading, the picture's the thing. So our most progressive journals have supplemented the linotype with the halftone.

The universe is the realm of the photographer. From him there is hidden nothing in the earth itself, nor in the heavens above the earth, nor in the waters that cover the earth—Storm King Mountain and the Los Angeles Aqueduct, a Pasteur inoculation and the followers of Carranza, the United States border patrol and the dismantled colliery at Cardiff.

Such pictures, like the rising of the sun, we are prone to accept as daily commonplaces, forgetting or not knowing that behind every picture lies a story often more interesting than the picture itself. In our pleasure at the finished negative we have forgotten the men behind the camera.

An interesting chap is this knight of the kodak. He has nerves of steel. He is composed of 90 per cent. of the fine gold of courage alloyed with 10 per cent. of the brass of audacity. Like the reporter, the camera man must know news. Also he must know how to get it. He must be at the right spot at the right time. Time and tide, volcano eruptions and bayonet charges, wait for no man. Perhaps the photographer has gone ten thousand miles to secure a picture; but, unless he is prepared when the critical moment comes, he misses the picture. And thereby hangs this tale. For the man behind the camera must possess quali-

[1] Courtesy of The Outlook.

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ties like those of the man who carried the message to Garcia. He must often do the impossible.

He must be a linguist, for he often traverses strange lands. Traveling at the head of a considerable outfit, he must know how to handle men. Penetrating often where he is not wanted, he must be a diplomat and he must know how to make himself *persona grata*. Otherwise his skill and bravery are in vain. During the Russo-Japanese War a famous American photographer, making his way to the firing line, was halted by a minor Japanese official. His credentials availed him nothing. "Tell General Nogi," said the photographer. The official did so. "If it is the American artist," the commander-in-chief sent back word, "let him go anywhere he wants to go." That photographer had seen to it that he was "solid," as we say, with the great Japanese commander.

Like the soldiers of the centurion, a news photographer must go when he is sent and come when he is bidden. One morning a young New York news photographer kissed his newly made wife good-by, mentioned the hour of his return that evening—and came back seven weeks later. He had been sent to Florida without time even to get a change of clothing. Mr. Horace Ashton, another New York news photographer, coming into his office one morning, was greeted with this inquiry: "Got any engagement for this afternoon or evening?" Upon replying in the negative, he was told by his employer: "Then I want you to take a little trip for me." In two hours he was on his way to Japan. He came back seven months later. So the camera man goes even to the earth's uttermost confines. Hardly is there a place on earth where he has not penetrated. Of a truth he knows that there are more things in heaven and earth than are dreamed of by the average inhabitant. He has seen them; for the news photographer is the nearest earthly approach to the all-seeing eye. What he sees himself he endeavors to bring back for the rest of us on his little glass plates.

To do this his equipment must be large. The newspaper photographer who never gets far from his office needs only his camera and a few extra plates. But the traveling commercial photographer, who gathers for us likenesses of foreign parts and strange events, must have an outfit like an explorer's. If he is going to the far North, he must have the dog-train equipment of a Pole-hunter. Camels will carry him in Asia and elephants in India. In Africa he must depend upon a caravan of native porters; for the camera men must carry not merely cameras and chemicals, but films, and food, and arms, and tents to live in. As for his picture machines, they are no pocket kodaks, but enormous cameras as big and heavy as so many hods of bricks; for when he goes halfway round the world to get a picture, the camera man can take no chances.

All this costs money—which is so much more reason why the picture should be successful. A photographic journey through Africa, for instance, may cost as much as $10,000. The photographer who heads such a costly expedition to bring back to us thrilling pictures of the unfamiliar cannot afford to have "nerves," like the photographer who went to Madrid to take pictures at King Alfonso's wedding. This photographer had his camera focused upon the royal equipage at the very instant that an anarchist hurled a bomb at the Spanish monarch. There, on the photographer's gound glass was a picture the like of which had never been taken—the blowing up of royalty. But the photographer was so much startled by the explosion that he forgot to snap his shutter. In striking contrast to this moment of forgetfulness was the self-possession shown by the New York newspaper photographer who took a picture of the late Mayor Gaynor while the latter was reeling from the impact of a pistol bullet fired at him by a would-be assassin as he was about to go abroad for a vacation. Then quickly and calmly reversing his plate-holder, this same photographer was able to get a picture of Street Commissioner Edwards as the latter was struggling with the would-be assassin.

With the news photographer such a

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display of self-possession is ordinary rather than unusual. On one occasion Mr. H. G. Ponting climbed the Japanese mountain Asama-Yama to get a picture of its crater. While his helper stood waiting with a second camera Mr. Ponting advanced to the edge of the volcano's mouth. He was in the very act of taking a picture when an eruption occurred. The assistant was as quick as the volcano. He snapped Mr. Ponting before the latter could even turn around. Then the two ran for their lives.

Mr. Rudolph Wille, who in 1901 traversed much the same territory in Africa that Colonel Roosevelt did in 1909, was suddenly beset by three lions, that rushed at him from a near-by thicket. To shoot them was impossible. The only accessible shelter was a tree close by, spreading over a rock. Mr. Wille scrambled up the rock and leaped for the lowest limb. The foremost lion was only inches behind. In his jump Mr. Wille lost his gun, but he gave no thought to that. He instantly unstrapped his camera from his back and calmly took pictures of his captors prowling below the tree until his plates were exhausted. Mr. A. Radclyffe Dugmore on one occasion crept to within thirty yards of a sleeping rhinoceros, when the beast suddenly jumped up and made for him at express-train speed. Nothing daunted, Mr. Dugmore waited until the animal was within fifteen yards of him and then snapped his shutter. His photograph of the charging rhinoceros is one of the most remarkable pictures in existence.

Even more remarkable than such self-possession in moments of passing danger is the cool, calculating courage of the photographer who deliberately risks his life to obtain a picture. When the American army first penetrated the Philippines, the photographers went with them. These photographers carried muskets as well as cameras and they fought side by side with the soldiers. Their pictures they took between shots. There is in existence a photograph of one of these intrepid camera men grinding away at a moving-picture outfit in the very thick of the battle. There was no fake about this likeness. A fellow-photographer, making his way over the battlefield, came upon his colleague with the moving-picture camera and snapped him.

During the siege of Port Arthur there was one point in the Japanese line where the Russian shells were falling like hail. "The folks at home would like to see what this looks like," said an American photographer. The Japanese begged him to take a picture from a protected position and paint the smoke and flying shells on his negative. "I couldn't do that," said the photographer. "It wouldn't be real, and the folks at home want the facts." So he advanced as far as a human being could advance and live, and set up his camera. The concussion of the next skell knocked him thirty feet, unconscious. His camera was wrecked, but Providence saw to it that the plate was unbroken. In all the world there is probably no duplicate of this wonderful picture of an exploding shell.

Probably no war photographer ever had a more terrible experience than that which befell Mr. Wille. He accompanied the Boer armies during their war with England, as representative of a Dutch newspaper. The thrilling pictures were to be had at the front of the battle line; so, to get into closer touch with events, Mr. Wille fought as a Boer soldier. Six of his front teeth were knocked out—one by a bayonet thrust, another by a blow from a musket butt, and the others when, in charging on horseback, he was thrown headlong on his face. On four occasions he was shot. Once he lay unconscious on a battlefield for sixteen hours. For fourteen weeks he was carried about in a Boer ambulance. He lost eighty-two pounds in weight. But all the time, when possible, he was taking or developing photographs.

Of late years the camera men, sighing, like Alexander, for more worlds to conquer, have turned their attention to the beasts of the jungle. Many of these photographs could a tale unfold. Mr. Dugmore was one of the earlier of these wild-animal photographers. His exploit with the charging rhinoceros was by no means his most thrilling one. Many of his photographs were taken

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by flashlight at night. He would fasten a goat or a sheep to a stake, set up his cameras and focus them on the bait, and build nearby a circular *boma* of thorns within which to await the arrival of his subject. His flashlight and his shutter were operated simultaneously by electricity, Mr. Dugmore pressing the button from within his *boma*. But sometimes the lions that he was after were late in arriving; and then his powder, dampened by the heavy dew, failed to explode. On such occasions there was nothing for Mr. Dugmore to do but leave the protection of his *boma* and insert a fresh charge of powder in his flashpan. These moments when he stood practically helpless in the dark, sometimes with three lions prowling close by, Mr. Dugmore declares, were the most terrifying experiences he ever had.

Mr. C. G. Schillings, the German scientist, is another celebrated animal photographer. Mr. Schillings was once charged by a herd of twenty-five elephants. He managed to kill the leading bull, and so turned the herd. Had they continued their charge, nothing could have saved him. On another occasion Mr. Schillings was swamped in an African river, close to a pool frequented by alligators. Mr. Schilling's comrades on the bank at once opened fire on the aligators, while others formed a human chain and drew him ashore. On still another occasion two rhinoceroses scented Mr. Schillings while he was taking their picture. They charged together. Mr. Schillings grabbed a gun and dropped both rhinos, but they were up again and after him with astonishing agility. He dodged behind a thorn-bush, but one animal went each way. The photographer was caught between them. Just as they were on him they collapsed.

But not all the dangers of photography come to those who picture wars and wild animals. There be perils as well for those photographers who go down to the sea in ships. Mr. Enrique Muller, Jr., in this country, and Mr. Henry Symonds, in England, devote their entire time to marine photography. Perhaps Mr. Muller's most remarkable picture is that of the United States battleship *Michigan* taken head-on while the battleship was steaming at twenty-two miles an hour. Mr. Muller maintains that photographing a speeding battleship head-on is fully as dangerous as taking a snapshot at a charging rhinoceros.

From what befell Mr. Muller one would judge that this is so. Mr. Muller took his photograph of the *Michigan* from a small motor boot. He ordered the engineer to keep the motor boat in the path of the great battleship until the last possible second. Just as he was about to snap his shutter Mr. Muller discovered that the vibration from the motor would probably spoil his picture. He took a chance and ordered the engine stopped. As he snapped his shutter he yelled for full speed ahead, but the engine merely sputtered and went dead.

In that moment while he was waiting for death Mr. Muller's one idea was to get still another snap at the battleship. That last snap took the picture in question. When the speeding dreadnaught was but thirty yards away the little motor came to life. The motor boat shot from under the bow of the *Michigan*, but the huge bow wave overwhelmed the craft, and Mr. Muller and his engineer found themselves fighting for life fathoms below the surface of the sea. They were rescued, and the exposed plate, though wet with sea water, was saved by prompt chemical treatment.

That is only one of the times that Mr. Muller has taken a picture at the risk of his life. Mr. Symonds has had an even more thrilling life as a marine photographer. During an international yacht race he once tried to get a head-on picture of the *Valkyrie*. The big yacht completely shut off the wind from his little twenty-foot sloop, and there he was becalmed under the very prow of the onrushing racer. He was capsized and barely escaped with his life. On a second occasion his boat was crushed by the impact of a diver whose armor had been pumped too full of air by an inexperienced helper, and who shot upward through the water with the force of a torpedo. Once a dummy

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torpedo sent Mr. Symonds's boat to the bottom during some naval maneuvers. On one occasion this daring photographer was caught at the bottom of the sea in a sunken submarine. Once he was nearly thrown from the fighting top of a warship by a sudden lurch of that vessel. A barge on which he was working was sheared in half by a speeding torpedo-boat.

But. Mr. Symonds's narrowest escape from death was when, in his capacity of official British naval photographer, he was caught between two advancing lines of torpedo-boats that he was trying to photograph. These vessels, rushing together like lines of cavalry charging each other, were traveling at terrific speed, and throwing up such mountains of water at their bows that the steersmen could see nothing of Mr. Symonds's low-lying craft. He managed to escape being run down, but was swamped in a terrible sea, and rescued only with the greatest difficulty.

Of all the men who have devoted their lives to the work of bringing us likenesses of the hidden things of the earth, none is so famous as Mr. James Ricalton, of Maplewood, New Jersey. Originally he was a school-teacher. Because of Mr. Ricalton's scientific knowledge, Mr. Thomas A. Edison sent him to India to find a certain kind of fiber to use in making electric lights. Mr. Ricalton found the fiber; also he found his life-work. He took some wonderful photographs. He has been taking them ever since—and that was many years ago. Though well in the sixties, nothing daunts him. He followed hard on the heels of Colonel Roosevelt across the continent of Africa, walking more than 1500 miles, and taking hundreds of photographs. In ten years he took 100,000 photographs. Once he made a photographic journey of 24,000 miles. All told he has traveled more than half a million miles.

He has not been to the North Pole nor to the South Pole. There is hardly another place in the world that he has not visited and photographed. He has photographed the Indian Durbar, the pilgrims in Jerusalem, the Canyon of Colorado in places where no other man had dared to go. Wild animals by the thousand he has photographed in their lairs. He took pictures of the Boxer uprising in China. It was he who took that marvelous photograph of an exploding shell at Port Arthur; and when he sent it home, he apologized because it wasn't better. He it was of whom General Nogi said, "Let him go anywhere he wants to go." And when the war was over, this intrepid old gentleman received a gold medal from the Mikado himself. The Japanese placed a proper valuation upon the wonderful services of this premier photographer.

Not all the difficulties of securing pictures are physical. Persons must be photographed, and many persons object strenuously to having their likenesses taken. The late J. Pierpont Morgan was wont to break his cane over the back of any offending news photographer who came within reach. Mr. John D. Rockefeller is another person who objects to being photographed. But Mr.. Ashton one time got sixteen excellent likenesses of the oil king by spending a fortnight at Mr. Rockefeller's hotel in the South and ingratiating himself with the millionaire on the golf links. In an unguarded moment Mr. Rockefeller consented to have Mr. Ashton take a snap-shot of him. What must have been his amazement when the latter brought forth from a near-by thicket, not the little pocket kodak that Mr. Rockefeller probably expected, but an enormous camera!

Pictures, we said, never lie. That is true; but they can be made to lie. And in this connection one is reminded of the way in which a news photographer secured the wonderful likeness of Mr. Roosevelt, then President, taking a hurdle on horseback. This photographer obtained an excellent likeness of an equestrian hurdling and skilfully fitted to it a head of Colonel Roosevelt. When he learned how the picture had been made, the President refused to allow it to be published. But he did consent to jump for a genuine photograph, and the resulting likeness was the well-known picture.

As it was with that photograph, so it is

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with hundreds of other pictures of men and events that come to us in our daily newspapers and periodicals. We glance at them casually and throw them aside, little realizing that the story of many a photograph is far more interesting than the photograph itself. Behind it may lie weeks of toil and privation, hair-breadth escapes, or deeds of real heroism. By the man who took the pictures these are unregarded. They are commonplaces. They are all in the day's work. With him, too, the picture's the thing, and the only thing. His heart is in his art, and to him a rare negative is more to be desired than rubies or fine gold.

PYRO[1]

By SAMUEL WEIN

PYROGALLOL, the oldest organic developer, is at the present day still used very extensively as a developer. The fine gradations of the negative, the great power of variation for errors in exposure, are properties which have created a lasting place for pyrogallol, although it quickly spoils when exposed to the air.

Pyrogallol has not the characteristic properties of an acid—it has a bitter, not a sour taste, and it does not redden blue litmus—hence chemists do not consider it as a true acid, and in chemical text-books it is now termed "pyrogallol," but to photographers it is familiarly known as "pyro," which term will be used throughout this paper.

Its use as a photographic developer was first suggested by Liebig and Regnault in 1851.

Pyro is made from gallic acid, which is prepared from finely powdered gall-nuts and macerated for some days with cold water. This decanted liquid is exposed to the air and allowed to become covered with mould. An addition of yeast is advantageous. The gallic acid, which separates, is purified by recrystallization from boiling water.

Another method of making gallic acid is by boiling the aqueous extract of galls with 5 per cent. by weight of sulphuric acid for about five hours. The reaction is complete when a drop of the solution gives no precipitate with a gelatin solution. Tannic acid (tannin), C_{14}, H_{10}, O_9, yields pyrogallic acid when heated to a temperature of 400° F.

Pyrogallol, as the name implies, is prepared from gallic acid by the action of heat. The gallic acid is placed in a porcelain crucible, over the top of which a piece of blotting paper is tied, the whole being covered and surmounted by a paper cone. With a Bunsen burner, or spirit lamp, the temperature is then raised to 350° F., when the gallic acid is decomposed into pyrogallol, which rises through the pores of the blotting paper and settles on the inside of the paper cone. The carbonic acid gas which is being generated during this process escapes through the orifice of the cone. The great drawback to this method is that a greater percentage of the gallic acid is decomposed into matagallic acid, $C_6H_4O_2$, so that only about one-fifth of the gallic acid is converted into pyrogallol.

An improvement introduced by Liebig (of the beef-extract fame) is to mix powdered pumice with the gallic acid, and allow a slow stream of carbolic acid gas over the mixture so as to remove the pyrogallol before it has had time to become overheated. By this method the yield is nearly doubled, but it is still less than half the possible amount.

[1] From the very beginning of the war the supply of photographic developers has been seriously affected. Prices have mounted upward until the latest quotations for some of them have indicated that there is practically no more available. Pyro is to some extent an exception, and is now by far the cheapest developer obtainable.—Ed. P. J. of A.

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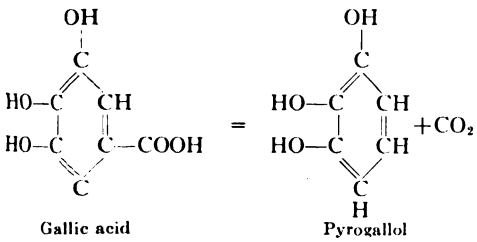
For an experiment on a small scale the best method is that devised by Prof. Thorpe, of heating gallic acid in glycerin (150 grains to each ounce) in a glass retort. The temperature of the liquid must not rise above 400° F. The heat drives off the carbonic acid gas, and a solution of pyrogallol in glycerin is left behind, which will keep well for months.

For the preparation of pyro on a large scale, an aqueous solution of gallic acid is heated to 400° F. in a closed vessel for thirty minutes. The solution is then boiled with animal charcoal, filtered, and evaporated to dryness. The solid residue so obtained is then distilled by gently heating it in a vacuum. In this way nearly all the gallic acid is converted in pyrogallol.

Pyro may also be prepared by heating gallic acid with twice its weight of aniline at 120° F. The aniline pyrogallate (melting point 55°–56°), so obtained, is treated with benzine or toluene, when pure pyrogallol is precipitated, or by heating pyrogallol 4—sulphonic acid with dilute mineral acids in a sealed tube for eight hours at 200°.

When gallic acid is heated with twice its weight of aniline, carbonic anhydride begins to be evolved at about 120°, and the whole of the gallic acid can be decomposed without raising the temperature much above this point. If the heating be continued until the aniline pyrogallate ($C_6H_6O_32C_6H_5NH_2$) are obtained on cooling; this compound is very unstable and melts at 55°–56°; when treated with benzine or toluene it is decomposed, aniline passes into solution, and pyrogallol remains in a practically pure condition.

The reaction expressing the change from gallic acid to pyrogallol is the following:



Gallic acid Pyrogallol

Or it may be written:

$$C_6H_2(OH)_3COOH = C_6H_3(OH)_3 + CO_2$$

Gallic acid — Pyrogallol

Pyrogallol is white in color, and is readily soluble in water, alcohol, and ether. In the presence of an alkali its action is that of a powerful developing agent, having a developing factor of 5.

The appended formulas have been found to work satisfactorily for both paper, films, and plates.

PYRO SODA

A

Water	35 oz.
Sodium sulphite	7 oz.
Pyro	1 oz.
Citric acid	45 gr.

B

Water	35 oz.
Sodium carbonate	3½ oz.

Both solutions keep well for a long time. For use take 1 part A, 1 part B and 1 part water.

PYRO POTASH

A

Water	35 oz.
Sodium sulphite	9 oz.
Pyro	3 oz.
Citric acid	22 gr.

B

Water	35 oz.
Sodium sulphite	4½ oz.
Potassium carbonate	14½ oz.

For use take 100 parts water, 3 parts A, and 3 parts B.

A single pyro solution, suggested by Lumière, giving good results, is the following:

Pyro	1 part
Acetone bisulphite	2½ parts
Potassium carbonate	6 parts
Water	100 parts

Another good single solution is the following:

Pyro	20 gr.
Potassium bromide	5 gr.
Sodium carbonate	160 gr.
Sodium sulphite	160 gr.
Water	10 oz.

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FIG. 1



FIG. 2

GRAIN IN NEGATIVES

By ERNEST MARRIAGE, F.R.P.S.

AMONG the pros and cons for small cameras, one consideration, the grain in the negative, is often overlooked or too lightly dismissed. The small size of the negative can, of course, be counteracted by making enlarged prints, which, it is generally assumed, may very nearly approach in technical excellence contact prints from larger negatives which may in some cases be taken with lenses of greater proportionate focal length. How far the idea is attainable depends upon the perfection of the negative and of the enlarging arrangements. Methods of enlarging are beyond the scope of this article, which is limited to the original negative. What are the essentials in a negative that is to be enlarged? It must have good range of gradation and sufficient contrast; definition should be critical; the image should be free from grain, all the detail in the plate should be due to the object photographed. Range of gradation and disposition of light and shade are probably less easy of appreciation and control in the taking, and the making of a tiny negative is less certain, than in one of larger size. Lack of critical definition is a stumbling block which will interfere with many results. It surprised me recently on examining a number of negatives, mostly taken with an 8-inch anastigmat, in order to find one with detail suitable for enlarging nine diameters, to discover that a considerable number would not stand the test, though contact prints in all cases appeared perfectly sharp. With a lens of shorter focal length, three inches for example, the definition would probably be keener; but, granting absolutely perfect definition by the photographic lens and successful development of the negative, there still remains to be considered the grain of the silver in the negative image.

An enlargement of five or ten diameters is generally sufficient to bring to notice the grain in a negative. Do users of small hand cameras endeavor to secure negatives that will bear enlargement? In several directions the very reverse is the case. Fast plates and unrestrained development of undertimed exposures both give a coarse grain. On the other hand, slow plates are fine in the grain, and full exposure with slow development tends toward technical perfection in the same direction.

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The use of a soluble bromide in the developer is almost universally condemned nowadays, whereas, given a sufficient exposure, it has a beneficial effect upon the grain of the plate, as will be seen later.

Dealing first with the non-controversial statement that the grain of fast plates is coarser than that of slow ones, let us see whether the difference is appreciable. Figs. 1–2 make the comparison. Both illustrations are enlarged nine diameters from similar negatives, which may be claimed to be critically sharp, and both prints are untouched. Fig. 1 was taken upon a very rapid plate, the fastest made by its producers, while Fig. 2 is on the slowest negative

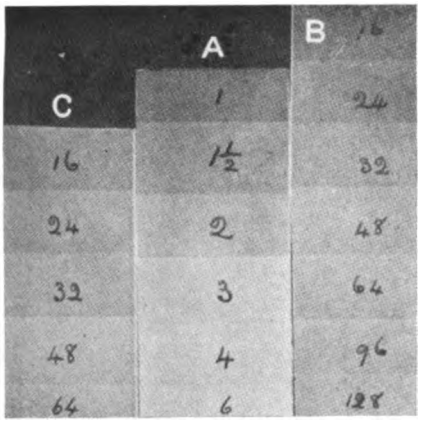


FIG. 3

plate made by the same firm. In Fig. 1 the enlarged silver grain gives a gritty appearance such as we see (and some admire) in oil prints; further than this, there are a number of white specks, the counterparts of aggregated grains in the emulsion, which seem to occur more frequently in fast than in slow plates. The grain is barely perceptible in Fig. 2 and the white specks are nothing like so frequent.

So far as I am aware, the effect of bromide in the developer upon the grain of the resulting silver image has only been considered in relation to lantern plates. It has been shown, I think by Mr. Chapman Jones, that variations in the color of the image in lantern plates coincided with variations in the grain of the deposit: the redder the color of the image, the finer is the reduced silver. As the use of a soluble bromide in the developer affects the color of the image to some extent in ordinary negatives, it seemed probable that the grain is also altered; microscopical examination proves that this assumption is correct.

To test the question, a series of exposures ranging from 1 to 128 was made upon a rapid plate. The exposed plate was cut into three strips which were separately developed. A print from the useful portions of these three negatives is reproduced in Fig. 3. The negatives received the following treatment:

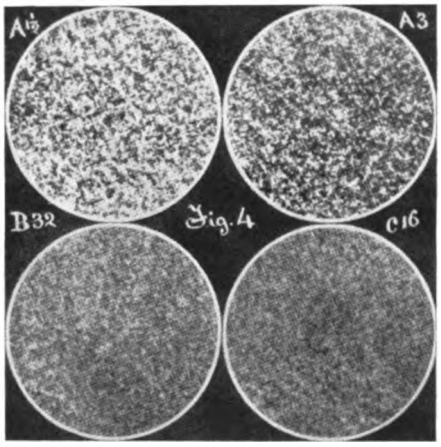


FIG. 4

A was developed in pyro-soda containing 30 minims of a 10 per cent. pyro solution to each ounce of developer. Time of development, six minutes.

B, a similar developer with the addition of 30 minims of 10 per cent. bromide of potassium to each ounce. Time of development, twelve minutes.

C. The developer similar to B, but 30 minims of 10 per cent. ammonium carbonate was added to each ounce of developer. Time of development, eighteen minutes.

A visual comparison of the strips showed that the densities of A1½, B32 and C16 were about equal, an estimate which is confirmed by the print (Fig. 3). Photomicrographs of portions of these areas were made, and prints from these

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negatives, showing a magnification of × 270, are grouped in Fig. 4. To these I have added a similar record of A3. Upon comparing these prints it is evident that the grain of A1½ is considerably coarser than that of B32 or C16, though the printing densities of all three are approximately the same (as has been shown in Fig. 3). The difference between the deposits in B32 and C16 is insufficient to demonstrate any material advantage in the use of ammonium carbonate. C16 has, however, the finer grain and the result is obtained with half the exposure of B32. A3 shows how increased density of the deposit is achieved by the spreading of the silver aggregates in the film.

My experiments show that fineness of grain is dependent upon development as well as upon the emulsion used in coating the plate, and that the use of bromide in a developer may be desirable if the resulting negative is intended for making enlargements. Whether better results are to be obtained by employing a slow plate, a minimum exposure and an unrestrained developer, or a rapid plate, a (for it) long exposure and a restrained developer containing a soluble bromide or ammonium carbonate, is a question I have not investigated. I would, however, point out that considerable relative and perhaps actual increase in exposure would be required in the latter case.—*Penrose's Annual.*

THE SMALL-TOWN PHOTOGRAPHER

By CHARLES I. REID

LIKE the farmer, the small-town photographer is an independent and honored person. Knowing everybody and known to everybody in his domain he has many opportunities for business building that do not fall to the lot of his brother in the city. Oftentimes without any competition in his territory he has the satisfaction of supplying all the photographic needs of the growing community, making for himself a comfortable living and laying up a nice bank balance, while at the same time enjoying to the fullest a fascinating occupation. The work of the photographer in a small town has the spice of variety, the lack of which often makes monotonous the work of the city specialist. Everything he photographs; from the local banker's family group to farmer Brown's prize heifer, now a portrait in the studio and again an outdoor group, or perhaps a spin in the runabout to the home of a prosperous farmer, where subjects innumerable will present themselves; all this in a day's work: Surely a most healthful and interesting occupation. With low rents and other expenses and moderately good prices for his work he has every opportunity to build up a profitable business and obtain a good standing in his community.

Offering such attractions, it must not be assumed that the work of conducting a photographic studio in a small town is easy or does not require much photographic knowledge or experience. On the contrary, the wide variety of work to be done makes it necessary for the photographer located in a small town to be proficient in many different branches of photographic work. He cannot specialize, but must be ready to handle any and all kinds of work offered to him and produce good results. His trade is discriminating, but also quick to appreciate good work. Every dozen of pictures turned out go to a number of other prospective customers, and nothing will create such a demand for photographs in a small town as good pictures themselves.

To the small-town photographer photographic success and financial success go hand in hand. Look at his work and

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you can tell whether he walks or has a touring car! His advertising and selling problems are comparatively simple. Knowing practically everyone within range of his operations he can reach them, periodically, with effective advertising literature directing attention to his work. The local weekly newspapers are good advertising mediums and also furnish a lot of helpful coöperation in the way of free reading notices that are more valuable than the paid-for advertising. Then the photographer in a small town has other ways of advertising not open to the man located in a city. Perchance there is a local event of some kind, and forthwith the local photographer is on the scene making negatives. This serves to remind many of the spectators that HE is THE photographer, that HE takes the pictures and reminds many that they almost forgot to have the baby's picture taken, that the family gathering on Sunday would be an opportunity for a family picture, that the new auto and its occupants should be placed on pictures to send to admiring friends, and so on. The photographer located in a small town must be a good mixer. He must be sociable and must adapt himself to the people in his locality.

A complaint sometimes made by photographers fortunate enough to be located in small towns is that people seem to prefer going to a nearby city to have their pictures taken rather than patronize the home photographer. Whenever this is the case it can be traced directly to the quality of work turned out by that particular small-town man. People in the smaller towns have a great deal of civic pride, and if the work of their local photographer is as good in quality as that of the man located in a nearby city they will take pride in mentioning the fact. Happily we find many of the small-town photographers well equipped to carry on their business, both as regards apparatus and photographic knowledge as well as business sense, and wherever such a man is located photography is regarded as a highly respectable occupation.

MOTION PICTURES AND ADVERTISING PICTURES

By DON HEROLD

AN advertising man can learn a lot at a moving-picture theater, and what he learns is pretty apt to be right, because a moving-picture theatre is full of people. No other place in the world today is so full of people as a moving-picture theater. A moving-picture audience is the best small cross-section of an advertising audience that I know.

A moving-picture audience ought to be an inspiration to an advertising man. I have sat in a moving-picture theater full of kids and grown-ups and have thought, "If I only knew how to reach these people, I would know all about advertising."

There would be only one other thing to know, and that would be my product.

A moving-picture theater is a laboratory for an advertising man.

There is but very little difference between what an advertisement has to do and what a moving picture has to do.

They both have to move the same human brain.

David Griffith would make a good advertising man. He is perhaps the biggest man in the field of moving-picture production today. The two things in which David Griffith believes most are *interest* and *vividness*. He has done more than any other man to put

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interest and vividness into the moving-picture art.

One way in which he put *interest* into moving pictures was to leave his hero hanging to a cliff. Previous to David Griffith there was a precept that moving-picture scenes should follow each other consecutively. Griffith borrowed from the novelist the device of suspended interest, and left his hero hanging on a cliff while he took up some other phase of the story. Then, later, he came back and got his hero off the cliff.

One way in which Griffith put *vividness* into moving pictures was by the introduction of the "close-up." There used to be another moving picture rule that all photographs should be taken full length. Griffith came along and cut his actors in two in the middle, so that a movie artist can now work with his face as well as with his arms and legs.

Mary Pickford is brought so close that she seems almost kissable.

Griffith has done a lot of foolish things like this with moving pictures. He does not care for precedents—he knows that mediocrity will feed on itself forever if let alone. He merely asks himself the simple question: "What will reach these people—this moving-picture audience?"

And that is a good abstract principle for an advertising man to follow. It is not type with which he is working so much as people. There are no sacred little rules. Only the audience is sacred.

Reasoning from people, and not from precedent, I think that advertising is simply a matter of being *vivid* (or, frankly, honest) and *interesting* (or human).

It is getting harder every day to be a good advertising man. It is harder, because advertising is getting simpler. It is harder to be David Warfield than it is to be a juggler or a magician.

Simple, straight, human copy and simple, vivid pictures are hard to produce.

The man who writes copy and the man who gets up advertising illustrations may both learn a lot at the movies.

The first rule for a good commercial illustration is, I think, that it should not be commercial.

One of the worst things in advertising is commercial dryness, which comes from following precedent too religiously.

A good advertising illustration should be realistic, first of all, and then—since advertising must have a certain dramatic element to put it over the footlights—it must be *vivid*, like David Griffith's "close-up."

Anything on the stage or in advertising must have its own carrying power. It must be good, and then it must have a little extra, intensified goodness in order to push through to the audience.

Most advertisers forget the necessity of this little certain amount of surplus goodness. Most advertisements seem to be just about so good, and to stop just there.

Like the cartoonist, the advertising man must add to actuality in order to make his impression more truthful. A certain amount of force is lost *en route*—from actor to audience.

The best advertising illustration is a plain photograph, well taken (with dramatic force added some way or other).

People are more accustomed to photographic "texture" than to any other illustrative "texture."

They have learned photographs better than they have learned water colors or oil colors or line-drawings. When they look at a photograph they think "truth." When they look at any other kind of illustration they think "imagination."

A photograph has realism—it is closest to life. Everyone has faith in the veracity of a camera.

The great problem in taking advertising photographs is to get into them the plus power which will carry them over the footlights. They must have interest and *vividness*.

You must get "close up," or you must get striking pictorial composition, or strong simplicity, or some other quality into the photograph to make it what I choose to call *dramatic*.

It is just as hard to say how to do this as it is to say how to write a good play.

This dramatic touch is necessary to all advertising, because all human beings are naturally full of lethargy. You

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cannot make a simple statement. You have to put a little bit of bang into it some way or other.

And you can't get dramatic bang into stuff simply by saying "Bang! Bang!" It is a matter of restraint rather than of noise. There is drama in a whisper. White space may have a larger voice than big type.

You notice I talk about pictures and copy the same way. They are the same.

Dramatic effectiveness in a photograph is often greatly dependent upon the way in which the photograph is used after it is obtained. Nothing should be done to the photograph which will take the life out of it. Anything should be done which will add to its realism and to its simplicity.

If it is a typewriter, the keys should seem almost touchable, just as Mary Pickford in a "close-up" seems almost kissable.

If it is an automobile, it should invite a ride. There should be a soft, leathery look about the seats. If it is accident insurance, there should be a dramatic atmosphere of accident.

Human beings always add interest to a photograph, but they should not add too much. Action adds interest, but the action should emphasize the thing advertised. The action lines should focus on the important thing in the picture.

The idea back of the illustration should be simple.

One of the best jobs of advertising illustration I have seen is in a recent Victrola advertisement containing a plain photograph of Caruso and a plain photograph of a Victrola record, with the caption "Both are Caruso."

There was no vignette behind the Victrola record and no vignette around the feet of Caruso. You simply had Caruso—record. Record—Caruso.

Many advertising illustrations are so full of ideas that they become puzzle pictures.

There is excitement in a photograph of a collar button, if it is a good photograph.

The brilliant advertising manager says: "Now, let's have a lot of people in our car, on a mountain precipice, looking at an aeroplane, with a railroad train in the distance, and a lot of mountain scenery in the background. We want to put over an impression of vastness, of all-out-doors, and show that our car can compete with a railroad train—and we want it to be different from any automobile illustration ever made before, so we will put in an aeroplane. I'm sorry we can't make it a submarine."

The best automobile illustration I ever saw was a plain photograph, and it had had only three hours' retouching. About seventy-five dollars had been spent on finishing the car so it would photograph well. The photograph was one selected out of twenty taken of the same subject.

Good photographs are largely accidental, so the only thing to do is to experiment until you have a happy accident. Good photographs are not cheap, nor are they to be obtained except at the cost of great patience and careful selection.

A few weeks ago I saw David Griffith's "two dollar" movie, "The Birth of a Nation," and it made me glad the way the people responded to a thing so well done. It made me glad to see that a movie producer could be highly intelligent in his work and still get thrills out of all kinds of folk, clear up and down the scale. A little girl on my left sobbed almost out of her seat, and a row of four business men on my right was held dead still for three hours—and I think I saw a couple of them wipe their eyes.

It made me glad to see that you "don't have to hit 'em over the head with a hammer." David Griffith has taken extravagant gestures out of the movies (which in advertising may be compared to an excess of blackface type). He has proved the possibilities of intimation. He has proved that people "get things"—and if they get things at the movies, I am convinced that they get things in an advertisement. I believe, for instance, that people who have never read a line of Packard copy have still obtained the impression of "class" that the Packard people have sought to put into their advertising.

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An instance of Griffith restraint is this: When the son of the Southern family, about whom the story is written, returns from the Civil War, sick and haggard, he is met on the front porch by his little sister. They stand with their arms around each other, in the doorway. You wonder how the mother is going to greet the boy. You are worked up to a point that you think you can hardly stand the reunion that is about to come between the mother and the son. Then an arm steals out of the open door, over the shoulder of the daughter and over the shoulder of the son. All you see of the mother is that arm. *That* is the reunion of mother and son.

You should see the way that big, motley audience responds to this bit of tragic intimation.

Almost every minute I would catch myself saying: "That is something that can be applied to advertising." To begin with, I noticed that the scenes were unusually short. They were short almost to a point of impressionism—flashes rather than scenes. Griffith has taken *fatigue* out of moving pictures—and I promised myself that the next morning when I got down to the office I would try to write paragraphs *without fatigue* and build pictures that were not flat.

I would be as bold and violent as I wished, when violence was right, and pray to be restrained when restraint was right.

That little shop girl on my left and those four business men on my right, they are my audience as well as they were David Griffith's audience.

And they are the audience of every advertising man, the world over. An advertising man must not deny the existence of people—pretty bright people, too, and brimful of emotion, every one of them.

An advertising man ought to spend a nickel now and then and go to a picture show and sit among his parishioners.

He should not only sit among them, but should think among them. And he will find it hard to think about anything except the picture on the screen. That fact alone should make him think harder than ever when he gets away from the grip of the picture story. Why does a picture compel him to concentrate? Why is it so easy for him to concentrate? Why is it hard for him to substitute his own thoughts for the thoughts the moving-picture producer wants him to think?

In this article I have tried to tell the secret. Part of it is in the *action*. Part of it is in *brevity*. Part of it is in *emotion*.

Good copy makes men think in pictures.

Good pictures make thinking easy.

Again I say, an advertising man ought to spend a nickel now and then and go to a picture show and sit among his parishioners.—*Printing Art.*

ADVERTISE thoroughly and efficiently in some way or other, so that you will arrest public attention. Men will sometimes say they have tried advertising, and that it did not pay. This is only when advertising is done sparingly and grudgingly. Homeopathic doses of advertising will not pay. Perhaps it is like half a portion of physic, making the patient sick, but effecting nothing. Administer liberally, and the cure will be permanent. Some say they cannot afford to advertise. They are mistaken. They cannot afford not to advertise. Ways of advertising are as numerous as the busy brain of man can invent, and we must use our brains in judging the best means of advertising for our business. Do not advertise something you cannot live up to. The habit of exaggerating is so common that very few believe all an advertisement says, and this habit can be carried to a point where positive damage will result.

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By S. H. LIFSHEY
BROOKLYN, N. Y.

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"COMING FROM THE BARBER"
BY H. HALL



'THE VASE"
BY H. HALL



"A PASTORALE"
BY LOUIS FLECKENSTEIN



PORTRAIT GROUP
BY H. H PIERCE

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COMPOSITION IN CHILD PHOTOGRAPHY

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

CHILD photography is one of the most popular branches of professional portraiture. There are many adults who wend their way but once or twice in a lifetime to the photographer's studio, but comparatively few parents can resist the temptation of having their children portrayed as often as the pocketbook permits it.

Parents, as a rule, have a weakness to record the growth and development of their offspring. It is such a pleasant occupation to look them over in after years and to study with gentle surprise the changes that time and conditions have produced in the features and general appearance of the little ones, and how differently, in many respects, they have turned out from what one expected when they were still "mewling and puking in the nurse's arms."

Amateur photography has made a big inroad into this particular branch of professional portraiture. It is so easy to take a snap shot, and no matter how badly the result may turn out it will always prove of interest to those who are immediately concerned with it. The amateur picture generally has something which is lacking in the studio print—a certain intimate flavor and naturalness which is sure to exercise a special charm upon parents and relatives and all those who are familiar with the individual ways of the child portrayed.

The professional photographer cannot compete with this quality, even if he indulges in home portraiture. It is beyond his reach.

This is the irresistible charm of amateur photography, and I believe the majority of photographers recognize its power, and would be more or less inclined to compete with it in their studio work—if they were allowed to do so.

But, strange to say, whenever parents take their children to a studio, they want something different. Few customers would be satisfied to accept pictures as Figs. 1 and 2 of a professional. They would turn up their noses and shrug their shoulders at such products. The trouble is that they do not want to pay for something which they might possibly do themselves. They vastly prefer pictures like Figs. 5, 6, 7, and 8. They are more typical as likenesses, and more dignified looking.

Thus the professional is really forced to photograph children very much the same way as he does adults. Of course, the scope is wider. There is much more chance for arrangement and composition. A child can be taken almost in any kind of position. A little boy you can put most unceremoniously on the floor, give him some playthings, and make your exposure. But never forget that this unceremonious treatment demands greater, or at least a more specialized, knowledge of composition. The simple bust portrait and the stereotype standing and sitting positions are after all the most reliable from a money-making point of view. We are a conservative nation in all matters pertaining to taste and art. And if the mother does cross the child's legs and smooth down its frock, and pull its bow around to the side nearest to the camera, the photographer had better dispense with his own ideas and take the bow and crossed legs if he wants to get an order, for children have been taken in that position since immemorial days. I, for my part, could never understand why it should be considered the correct thing for little boys and girls to sit still in a chair or on a skin rug, or to lean against a table with crossed legs, when they never do such a thing in life.

The tendency is luckily for an increased naturalness in the posing. In home portraiture the parents of the young sitters are apt to let the photographer do what he likes with their

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PORTRAIT
BY ADELAIDE HANSCOME

PORTRAIT
BY MISHKIN STUDIO

PORTRAIT
BY M. B PARKINSON

PORTRAIT GROUP
BY H. H. PIERCE

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children. Figs. 9, 10, 11, and 12 are all examples of this method. Fig. 9 strikes me as being a trifle too elaborate. In my opinion nothing is gained by making the portrayed portions mere figures in an interior. In this case the arrangement is exceedingly well managed, but the rug, the armchair, the screen, and the portrait on the wall furnish almost as important features as the faces of the sitters. Fig. 10 is excellent as a specimen of infant photography, and a large step in advance of the stereotyped baby pictures we are accustomed to see. It is a picture of the baby, and the mother's face is subordinated accordingly. The distribution of black and white against the middle-tint background is a clever piece of space arrangement. Fig. 11 shows two girls playing checkers. It is quite logical to present children engaged in some game, but it is apt to injure the natural expression. The expression becomes specialized, more accidental, and for that reason less typical, and it is, after all, the typical expression which the public demands. For the same reason compositions like Figs. 2 and 3 ought to be avoided. Mathilde Weil's charming composition is too much like an amateur picture, in the best sense of the word, however. It has pictorial pretentions, and fulfils them. But it is not portraiture. And Fig. 3 is too close an approach to the blurred tonal effects of the Secessionists, which render portraiture impossible. The only mistake Mr. Hall made is that he put a piece of pottery into the hands of his little boy instead of a crystal ball. The Secessionists do not yet approve of pottery; only brass pans, crystal balls, and statuary pass muster in the higher art circles.

There is one technical peculiarity which should really regulate all efforts in this direction, and furnish the fundamental basis to work upon. And this is really in the nature of a deficiency, namely, that the light in the ordinary studio is seldom good enough for very brief exposures, which would be the ideal condition for the fleeting expressions of a child's face.

For that reason, and solely for that reason, all attempts at depicting animated expression, motion, and vivacity (as occur so often in the life of children) should be left to outdoor and amateur photography. Indoor photography, whether studio or home exposure, must content itself with dignified compositions and the getting of likenesses, a composite expression of all the various expressions that might interest in the faces of our little ones. Henry Havelock Pierce seems to pursue that golden middle way. Fig. 8 is a trifle stiff, but Fig. 4 (as are Figs. 5 and 10) is a capital example of what I consider good child portraiture. Pierce somehow always gets the hands too dark, but that is a different matter. The principal thing, the likeness of the little one, is there, a pleasant, natural, and no doubt typical expression, and the composition is simple and in good taste.

SPECIAL pride should be taken in the showcase and window-display. Every wide-awake photographer can make the window feature of great interest to many people. The display should harmonize with the advertising in the papers. If there is anything new in the way of novelties, or in any new thing in photography, give it a prominent place in the display-window or showcase. It is one of the best places to advertise it. Once a week is often enough to change the display, but the glass must be kept clean.

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HOME PORTRAITURE

BY FRANZ GRANIER

BY M U. T. BERNOULLI

BY WM. KUBELER

BY M. WEIL

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CONTROL IN LANTERN-SLIDE MAKING

By T. H. GREENALL

IN slide-making from a number of negatives differing widely among themselves, a considerable amount of skill is required if the best result is to be obtained from each without the necessity of making numerous trials. Some of the negatives may be thin and delicate, others dense; some flat in gradation, others more or less contrasty.

If trials are made, the method of giving several exposures on one plate is not to be recommended. A lantern plate should be cut in strips and several separate trials be made on that part of the negative which includes the highest light in the picture. The strips may be developed together, but for different times; the time of development and the appearance of the image when development was judged to be complete being noted in each case. No alteration should be made in the developer, as if that is done it introduces a new factor and may lead to great confusion. As a rule, control may be exercised by varying the exposure and the time of development.

The practised hand, however, may adopt another method, which calls for little more skill and gives perfect slides on chloro-bromide, or slow lantern plates. This is the dual method of development. There is only one thing it will not give, and that is a cold black, but since the cold black of a commercial slide is very rarely called for as far as the amateur slide-maker is concerned, that is no practical disadvantage.

With plain bromide or chloride plates tentative development of any kind is not to be recommended. It is a mere makeshift. But with chloro-bromide plates the dual method may be adopted with the certainty that no better results could be obtained, even with much greater labor.

The exposure having been judged as nearly as possible according to the result desired, a start is made in a dilute, highly restrained developer, which commences with the deepest shadows and gradually piles up density. After this has continued for some time the slide is taken out and finished (when the exposure given has been short of that necessary for the restrained developer) in a second or detail-giving reagent. By this method it is easy, with chloro-bromide plates, to get equally good results from a given negative with exposures varying as one to three, and without knowing beforehand what the exposure has been. Of course, the color of the slides will vary with the exposure, but all the colors are pleasing, and, moreover, there are simple methods, which I will describe later, of changing the color of a slide, if deemed desirable, by bleaching and redevelopment.

Dual development is a very old idea, but in all the published articles I can call to mind the mistake is made of employing alkali in the second or finishing developer. The result is that, while the slide is being finished by the bringing up of the detail in the high lights, it is also usually "finished" in quite another sense by the blocking up of the shadows.

The reagent which I employ, which is a solution of eikonogen and sodium sulphite, without any free alkali at all, has no action of that kind. The deposit forming the image is darkened in color, but the shadows remain perfectly transparent until the end.

In this method of slide-making it is essential that the development shall be watched in its final stages. It is therefore necessary for the dark-room light to be of ample strength and constant quality. With an incandescent gas burner as the illuminant, and one or two thicknesses of yellow tissue paper about 18 in. x 12 in. as the screen, we have a strong, diffused, safe yellow light, admirable for the purpose.

As some guide to the strength of the illumination, I may say that it should be easy to read small type at, or within, one yard of the lantern.

Since hydroquinone is a constituent of the restrained developer, it is essential

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that precautions shall be taken to eliminate variations in the temperatures of the solution, except in the warmer months, when, provided the water is not drawn from a cold source and used before it has reached normal temperature, no special precautions are needed.

In winter a constant temperature may be obtained in the following manner: A night light is placed on the table and covered with a box about 6 in. in depth, to screen off the light. On the box is a porcelain vessel containing about a quart of water, and the developing dish or tank is placed in this water bath. In this way the developer may be kept at 65° without variation. To work with a developer first hot and then cold can only lead to disaster.

Choice of Developer

In developing for colors on chlorobromide plates, we are often told to add ammonium carbonate to the developer. My advice is to do nothing of the sort. Not only is ammonia a very tricky reagent, being volatile, but the colors obtained by its use are usually far too vivid to be agreeable in monochrome. A dilute, suitably restrained, hydroquinone developer may be employed; but a more pleasing color is given when a portion of the hydroquinone is replaced by pyrocatechin. It is not easy to construct exactly the right formula to suit a particular plate. I, therefore, give my formula for Paget slow lantern plates:

Hydroquinone	6 gr.
Pyrocatechin	6 gr.
Citric acid	6 gr.
Potassium bromide	6 gr.
Potassium metabisulphite	9 gr.
Sodium sulphite	60 gr.
Potassium carbonate	80 gr.
Water to make	24 oz.

The ingredients may be kept separately in more concentrated solutions, the metabisulphite being used to preserve the two developers; but it is important that the total amount of metabisulphite in the mixed developer should be exactly as stated in the formula, otherwise the behavior of the developer will be altered, unless an adjustment was made in the amount of alkali.

In this developer the image should appear, at first very faintly, in from eight to ten minutes; though, naturally, the image appears more quickly with fresh solution than as the solution becomes used. Development should be complete, *i. e.*, density should be sufficient, in from twenty to thirty-five minutes, according to the character of the original negative and the result desired. From two to three dozen slides may be developed in the quantity of developer given in the formula.

The above is the restrained or density-giving developer. The second or rapid detail-giving reagent, only to be used after the restrained developer, and then only so far as may be necessary to bring up detail not developed in the restrained developer, or, in special cases, to soften gradation by shortening development, is composed as follows:

Eikonogen	10 gr.
Sodium sulphite	60 gr.
Boiling water to make	2 oz.

In small, well-filled bottles this will keep many months. It may be used repeatedly, provided the slides are rinsed as they are transferred from the restrained developer. The time required in the eikonogen, of the strength as given above, varies from a few seconds upward, while slides which have received ample exposure for the restrained developer do not, in the ordinary way, require treatment with the eikonogen at all.

The restrained developer as given above is intended to be used in a tank; but if it is made up with six ounces instead of twenty-four ounces of water the time for development is reduced to five or ten minutes, and it may be used in a dish. Dish development is, however, laborious, and I will assume that a tank is to be used.

In my experience the best tank for such work as this is one taking six plates in separate sheaths, so that each may readily be lifted out for examination. A makeshift arrangement, somewhat wasteful in developer, is furnished by a couple of 2-pound marmalade jars of cylindrical pattern, with light-tight covers. Each

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jar of this size will be found to hold two plates, or, at a pinch, four, in two pairs back to back.

As plates are exposed they are put in the tank in rotation, at intervals of two or three minutes, to allow time for individual treatment. The time each plate goes in the tank is noted on a memorandum sheet, and at intervals of eight or ten minutes each plate is lifted for examination and returned to the tank. It is important in putting it back to put the other edge uppermost to equalize development. One precaution, necessary in all tank development, is that the upper edge of the plate must always be well below the surface of the developer.

Judging the Exposure

The exposure to be given will be decided by the density, together with a consideration of the gradation of the negative. It may also be borne in mind that the fuller the exposure the warmer will be the color of the resulting slide. But it is obvious that when an attempt is made to control both color and gradation the exposure must be fairly accurately judged.

Whatever exposure is given must not be more than is necessary for the restrained developer. Although by using a developer still further diluted and restrained it would be possible to deal with such excessive exposure, it is not profitable, because the color obtained would be too red for most subjects. On the other hand, if we give less exposure than necessary for the tank we always have the eikonogen to fall back on.

As regards actual exposures, my own vary as follows: Using as illuminant an upright incandescent gas burner, with mantle in good condition, I give five seconds at two feet for a thin, delicate, rather flat, negative; five seconds at fifteen inches for an average good negative; ten or twelve seconds at twelve inches for an exceptionally dense negative, the rule being that contrasty subjects are exposed nearer the light than flat subjects.

When to Stop Development

Having eliminated temperature as a factor in causing variations, a method of developing by time may be strongly recommended, with due allowances for the gradual weakening of the developer and the character of the original negative. Thus a slide from a contrasty negative must be given a shorter time—not, however, less than fifteen or twenty minutes for a very contrasty subject—while a slide from a flat negative must be left in the tank as long as it will continue to gain contrast.

A visual examination for density should always be made, but it is apt to be misleading. When in doubt it is a good plan to split the difference.

A slide which appears anything like correct before fixing will be weak afterward. In this respect slide making is much like p.o.p. printing, and the redder the color of the deposit, beyond a certain degree of redness, the heavier should the slide be made to appear before fixing.

A visual examination for gradation in the high lights is easily made, and is of the highest importance. A slide is not correctly developed until the highest lights appear veiled and are throughout lower in tone, both in surface appearance and by transmitted light, than the unexposed margins of the plate. They will not appear veiled after fixation. Whether full development of the high lights will occur in the tank depends upon whether the exposure has been sufficient for the restrained developer. In case it has not, the development of the high lights is to be completed in the eikonogen.

Use of the Eikonogen

Having gained density in the tank, slides which are short of gradation in the high lights are transferred to the eikonogen. They must be rinsed before transferring. The effect of the eikonogen must be closely watched, while the dish is continuously rocked, and as soon as the highest lights appear distinctly veiled, as compared with the unexposed margins of the plate, development is complete. When the eikonogen

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is used prematurely with the object of softening the gradation, its action is naturally very rapid—a few seconds will suffice—the slide being then immediately plunged into an acid fixing bath. On the other hand, with short exposures, insufficient for the restrained developer, which have already been in the tank for the normal time, the action of the eikonogen is comparatively slow and regular. Should the lights refuse to develop in the eikonogen, the negative is too hard for slide making, or the exposure has ben much too short, or the eikonogen, through excessive use, has become exhausted or contaminated with restrainer. It must be clearly understood that with full exposures the eikonogen has a very powerful softening effect on the gradation, and must therefore be used cautiously; while with short exposures its effect is normal.

Improving a Weak Slide

The slides, having been fixed and washed, may be judged, while wet, in a lantern, though they will be slightly denser and also colder in color when dry. A slide which is rather thin and lacks "body," as may happen when the original negative is weak, or development is not carried quite far enough, may be improved by redevelopment after bleaching in the following solution:

Potassium bichromate . .	20 gr.
Hydrochloric acid	10 min.
Water to make	2 oz.

This solution will keep, and may be used repeatedly. The image bleaches very quickly. The slide is then washed for a few minutes in running water, or in several changes, exposed for a few seconds to any source of actinic light (although the whole operation is usually done in actinic light), and redeveloped with any active, unrestrained developer.

It will be found that the colors given by different developers are not the same. Pyrocatechin gives a very nice color, particularly suitable for sunshine effects, *i. e.*, if the slide was originally warm in color; amidol converts a red slide into a very pleasing greenish-black suitable for misty woodlands; hydroquinone tends to give warm black; but much depends on the nature of the original.

If it is desired to change the color of a slide without intensifying the image, the bleaching may be done in bromide and ferricyanide as for the process of sulphide toning, or in permanganate and hydrochloric acid, and redevelopment carried out as just described.

Reduction

Frequently, through intentional or accidental over-development, a slide may be either slightly veiled or overdense, or both. In this case the remedy is reduction. This may be easily and safely accomplished by passing the slide through a very dilute solution of potassium permanganate and sulphuric acid. The formula is as follows:

Stock Solution

Potassium permanganate . .	10 gr.
Water to	1 pint

Half an ounce of stock solution is taken and diluted with two or three ounces of water, and not more than two minims of strong sulphuric acid are then added. The solution may be used until it begins to go muddy. For slight reduction, we take a slide between the finger and thumb, and agitate it for about one second only under the solution, transferring it immediately to fresh, and preferably running, water. It will be seen that there is not time to put the slide down in a dish and flood it with the solution. The treatment is repeated until just the right degree of brilliance is obtained.

No clearing bath is necessary, unless the reduction required has been considerable, in which case the permanganate bath should be followed by a bath of oxalic acid and sodium sulphite, or of metabisulphite. The reducer used in this manner will be found to act very evenly, quite unlike hypo and ferricyanide, and yet not in so softening a manner as ammonium persulphate.

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Hardening, Spotting, and Trimming

Very slight washing is sufficient after the secondary processes of intensification and reduction, when the slides should be hardened in a bath of chrome alum (one ounce to a pint). Spotting is most satisfactorily done with the transparent albumen colors sold as "spotting colors." By mixing these it is possible to match the color of most of the slides pretty closely. Trimming, in slide making, is usually avoided by centralizing the subject when the exposure is made; but accidents happen, and a diamond is occasionally useful. The parts trimmed off may be made up with cardboard of the right thickness when the slide is bound up.

In conclusion, the details in this article refer to slides made by contact. Reduction by artificial light tends to increase contrast; so that a normal negative for contact work would have to be treated as a contrasty negative for reduction purposes, and a specially full exposure given with reduction of time in the developer. Much depends on the character of the negatives, the degree of reduction, and the nature of the illuminant employed.—*Photography.*

SKETCH PORTRAITURE

THIS style of portraiture has been remarkably popular for the last few years, and, while the demand for it may not be so great in the future, yet inquiries made among various provincial firms indicate that the volume of business shows no signs of decreasing. There are several methods practised in the production of sketch work—from the simple suggestion of a sketch to the more elaborate drawing of practically the whole of the picture.

In many instances a plain vignetted print—that is, the portrait taken against an ordinary background and then vignetted—is enclosed in a folder bearing the legend "sketch portrait." In others the so-called "sketch" is printed through a celluloid film on to the print. The former I may dismiss; the latter requires only the simple directions given by the vendors of the sketch-background negative.

As the kind of portrait varies somewhat from the ordinary "solid" work it must be understood that the negative and print should be made specially to this end. It is very rare that a satisfactory result can be obtained by blocking out a dark background in order to obtain a white. The relative shadows of figure and background are out of harmony, consequently the portrait must be taken against a white or bluish-white ground, so arranged as to have the full volume of light upon it, without unduly influencing the lighting of the figure. Regarding the latter, the kind of lighting desired is soft and well diffused, with no heavy shadows appearing anywhere—in fact, a picture in a high key.

The negative should be brilliant without being in the least degree harsh, and soft enough to show full detail in the white draperies. This should result in exactly the type of print most suited to the purpose—that is, delicate without being in any sense weak or flat. Should the background in the negative not be rendered of sufficient opacity to print white, there are several ways of producing the result required—close vignetting or air-brush work on the negative being two of the simplest. In any case, it is worth while going to some trouble to secure a pure white ground at the back of the portrait. If there is a slight tint round the figure it forms rather an unsatisfactory base on which to work the sketch.

Almost any of the matt or slightly grained papers may be used in platinum carbon, bromide, or gaslight, though of the three methods the silver develop-

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ment paper is probably the most popular. To obtain the best effect it is necessary to print the figure on to a much larger sheet of paper than would be employed in the usual way. For instance, a cabinet portrait looks well when printed on 1/1 plate or 10 x 8 paper, or even larger. In the majority of cases there is no outside margin of mount showing, the print being dry-mounted onto a six or eight-sheet board and bevelled close to the edge. This is a most effective way of finishing off. A variation of the above method is to mount the print on a two-sheet board (or the print may be made on double-weight paper) and plate-sunk. This has a very quiet and refined appearance. For this a larger sheet of paper should be used to allow of a generous margin outside the plate-mark. Still another style of finishing off is to omit the plate-mark and surround the print with lines of varying widths and thickness.

The materials required for sketching are those usually found in the finishing room, and need not involve any great outlay. For black and white work the ordinary leads used for retouching answer the purpose well, and Koh-i-Noor pencils are equally good, but cheaper ones produce inferior results. The particular grade is not of much importance, and must be selected to suit the individual and the kind of work in hand. Too *hard* a pencil, however, is to be avoided, as it is apt to make the result appear wiry and mechanical. A soft lead gives much better quality and variety of line. The two grades which are probably most in use are Nos. 3 and 4 Hardtmuth or H and H B Koh-i-Noor. Besides these, some hard and soft rubbers will be required (the hard rubber being pointed at one end and wedge-shaped at the other), and a supply of black and sepia powder, which can be obtained from the dealers for this purpose. For the black powder many finishers use the ordinary powdered lead, but it is not as good as the commercial article supplied for sketch work. The latter is softer and free from the "shine" that lead gives. One or two scrapers, wash-leather pad, and a few stumps complete the outfit. In using the powder, spread a little on the wash-leather pad and rub well in. This will hold enough for a large number of prints. The wash-leather pad is not for direct application to the prints, but merely a convenient way of holding a supply of powder for use. For rubbing a tint on the sketch any rough material may be used. "Knitted" stuff answers the purpose well; some workers use the finger of an old wash-leather glove.

In most cases the print is ready for finishing immediately it leaves the mounting machine. Occasionally, however, the hot mounting plate imparts rather a greasy surface, and it is better, when the print is cool enough, to sponge it thoroughly all over. This ensures clean "whites" and an agreeable surface to work upon. When bone dry, begin by rubbing a small quantity of the powder all over the centre of the print, but avoid getting too much on the figure portion. Then soften off at the edges until the gray coating of powder merges imperceptibly into the white margin of paper. This must be well done, as it supplies all the half-tones needed in the sketch. Should the result be patchy or uneven, the pumice powder will help to produce a more regular surface, and a few experiments on waste prints will show the depth of tone required. Clean up the figure portion with the pointed rubber, unless the picture errs on the contrasted side, when a slight tinting all over has a considerable softening effect, similar to "flashing" in P. O. P. In working up white dresses and lace, the high-lights only should be picked out. Now proceed to the sketch proper, which should necessarily be appropriate to the sitter and the style of costume worn. It is advisable to have a sketch copy before you, and for this purpose a folio of subjects suitable for backgrounds is indispensable—little window pieces, panelling, river views, trees, etc.—so that a sketch to suit the subject can immediately be selected. The actual technique cannot very well be taught in the scope of this article, but a few suggestions are given for the benefit of those whose practice with the pencil has not been very extensive.

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First, lightly sketch out the main lines in your design, paying due regard to composition and balance. Then with the stump or pencil fill in the deeper shadows such as would occur below a window-sill in an interior or on the side of a pillar or column—and here note that the light and shade in your drawing must agree with that of the figure. The lights can now be picked out with the rubber, using for sharp touches the hard, pointed rubber, and the soft rubber for any broad lights that may occur. If the original powdering has been properly done, the sketch will, at this stage, be practically complete. Should it appear too soft or woolly, a little judicious sharpening up with the pencil and scraper, by slightly emphasizing a shadow here or a light there, will have the effect of pulling the sketch together. This must be done discreetly, just enough to give "snap" to the picture, avoiding an over-mechanical or hard appearance. This method of finishing can, of course, be carried to any extent, but elaboration is not necessary —in fact, it is a disadvantage and likely to claim undue attention from the portrait. From the description given, it may appear somewhat complicated and difficult, but a little practice will enable anyone possessing a fair amount of taste to make these little sketches rapidly and effectively. An experienced finisher will usually take about five or ten minutes for working in the background of a whole-plate print. Regarding the method of making a "tone" to represent shadow, there are many, the choice of which will depend a good deal upon the taste and skill of the worker. Probably the way most in use is by first rubbing in the larger portions of shadow with a paper stump charged with powder, and then working over this with the pencil. The style of line used is more or less an acquired knack, only to be obtained by practice. Hatching is often resorted to, and is useful where it is desired to finish off a shadow with a hard or soft edge at will. A sound technique in the line work is very desirable and worth some practice to attain since it helps considerably to introduce variety and interest.

A celluloid set-square may be used for a few of the leading straight lines, though they must not be too evident in the finished result. In sketching a window (interior), the best plan is to draw the window frame first, then draw the foliage or view in the opening. The square or diamond panes are drawn *over the top* of the view portion. This gives a very realistic effect of distance to the outside. Do not draw the window panes with hard, rigid lines, but vary them in depth, making them a little deeper where they cross. Unless the worker has some knowledge of perspective, it will be best to render all background flat on or a distorted effect is bound to follow. The sketches should be kept neat and small rather than spread out all over the paper. A spirited and well-executed drawing on the small side is far more effective than a larger and probably poorer design. This is one of the commonest faults in beginners' work, and, although it is somewhat difficult to describe, it will be understood readily that the small sketch is much more likely to be spirited than the "spread-out" type. The latter is and will appear, labored. One sometimes sees the whole side of a room used for a background, and it is anything but pleasing, producing an irritating, scattered effect, while a rapid little sketch of part of a window sill, with a simple vase, drawn in with due regard for light and shade, charms by its very simplicity. Some attention should be paid to composition—that is in relation of the portrait to the background. Thus, it is easy to alter a person's height by an arrangement of panelling or windows.

Avoid bringing in lines that will "quarrel" with the head; in fact, no lines at all should touch the head or face. The head can, of course, be suggested as appearing in front of a panel but the lines here must be vignetted off. Sometimes a good effect is produced by drawing the background a little away from the figure, and give the connection with a few hatch lines. But circumstances and one's own taste vary to such a degree that it is impossible to give any precise rules on this.

In conclusion, bear in mind the follow-

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ing: Avoid a mechanical style of line-work, put variety into the shadows, "concentrate" the sketch, and exercise your eye for balance and composition. Lastly, realize that extreme beauty is invariably found in extreme simplicity.

If platinum paper be used it will be found very advantageous to size it in a weak solution of gelatin or parchment cuttings. This tends to harden the surface and make it less like blotting-paper and more like drawing-paper. If this is done the work may be fixed by steaming as is usual with crayon or pencil-finished bromides. The steaming does not affect the appearance of the print unless it is overdone, when glossy patches may appear.

Some workers may prefer to do their sketches in water-color instead of pencil, and excellent effects may be so obtained. Great care must, of course, be exercised to secure an absolute match between the tone of the print and the pigment used, and the work must be of the most light and airy quality possible. Large, flat washes or clouds are inadmissible.

Some very dainty effects may be obtained upon carbon prints by using the pigments supplied to match the various tissues by the makers. The surface of the print must be carefully cleaned with cotton wool and benzole to remove any traces of waxing solution, and the part to be worked on should be washed over with diluted oxgall or Newman's sizing preparation.

Excellent effects may be got by working upon bromide opals, the surface of which is very suitable for delicate pencil work. Rubbed tints do not look well on them, and all the shading should be done in fine lines. In cases where copies have to be made from bad originals it is a good plan to print only the head fully out and to indicate the remainder by the merest ghost, which will serve as a guide to drawing in the whole figure in pencil. Some very effective pictures can be made in this way from old daguerreotypes and faded cartes, it being much easier to sketch in a dress than to work out a multitude of spots and scratches.—*British Journal of Photography.*

THERE is no one part of a photograph studio which receives so little attention, so little thought and care as the dark-room. The average photographer thinks any old place good enough for his dark-room. If the photographers of the United States would give their dark-room more thought and care, we think you would find a marked advance in the quality of the photographs turned out. The dark-room is of the utmost importance in the production of fine work. A dark-room should be to a photographer what a chemical laboratory is to a chemist—his pride—and you scarcely ever go into one that the photographer does not make some excuse about it. A dark-room should receive as much attention, if not more, than his reception-room, for surely as much depends upon it. Your dark-room should be large, well ventilated and clean; have plenty of sink and shelf room; a place for everything used there, and everything in its place; use only the best chemicals, for they are the cheapest in the end, and only keep those you use there. This matter of chemicals is one that needs careful study by every photographer. Were you to fill the position of demonstrator one short month, you would wonder how some photographers do as well as they do.

YOU, as photographers, have chosen a profession which, when properly conducted, is capable of great application and achievement; an art which may be so elevated and dignified, by careful attention to details, prompt and honorable service to your own patrons, manly deportment in your daily lives, as would soon class you among the leading professions of the day.

That you as professional photographers have been regarded in the eyes of the public as following an art of easy-going practice and common-place attainment is largely due to your own inability to properly present to your constituents the full force of your environment as co-workers in one of the most absorbing and entertaining arts of the present age.

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WHAT IS NEEDED

WHAT the public demands to-day is not a picture of elaborate accessories, theatrical posings, or stained effects in lighting. What it *does* want is good solid work. The man who "lives and has his being" in a little village and looks to the farmer for his support can make just as good pictures as the person who draws his trade from Fifth Avenue. You don't need new plates, new papers, new lenses, and cameras to attain this. What you *do* need is new ideas, new brains! And in this connection it is also true that a man may be apparently clever, dazzle the eye for a moment, "own the earth," so to speak, but the meteor disappears after a time, and so will meretricious work.

In the matter of posing and lighting, photography of the better class has most decidedly advanced. People are beginning to realize that they are human beings and not wooden statues; and hence there has arisen a demand for broader and more artistic work. The orthodox manner of taking men, women, children, groups, has now happily been relegated to the past. On all sides there are evidences of a strong effort to step from the conventional into the original. As for lighting, photographers are studying "values" as understood by the artist, realizing that there is a distinct color line between flesh tints and meaningless patches of white.

It is but a step from the skylight to that "chamber of horrors," the dark-room, which has been most happily named. It is dark by nature, and its "ways are dark" in too many instances. It is a matter of congratulation, however, that photographers are beginning to resort to hydrometer test instead of the misleading saturated solution.

In all vocations of life there is one thing desired by all—success—and the different ways to this end are numerous. Business long ago ceased to be a matter of inheritance, and became the property of brains and persistance, and to gain it we should use never-tiring efforts. Each and every man should be constantly studying and devising means by which he can increase his business or hold what business he has.

ON HAVING A METHOD

OF the many causes to which failure in the photographic business is ascribed, want of method is the last thing that would be admitted, though more often than not the real reason of ill-success. We hear often enough of such explanations from bankrupts themselves, as "want of money," "want of opportunity," "bad luck," "bad debts," etc.; but if the official receiver could be induced to state the causes of the majority of failures which come under his notice, he would say "want of prudence," "want of tact," "want of knowledge," "want of pur-

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pose," and above all things, "want of method."

Yes, write it large: WANT OF METHOD; the true cause of half the failures in life. It has destroyed life's prospects, blighted ambitions, wrecked businesses, and broken men down in the heyday of life with worry, anxiety and sorrow. Yet men will go on trying to do business without method, heedless of the lessons they should learn by the sad experience of others, and blind to the teaching of their own bitter experience when trying to run a business in which method is either inadequate or totally absent. Day by day they are worried by troubles arising from their own errors or mistakes, or harassed by inability to get business done on time, or to make ends meet, and yet they cannot or will not see that the remedy is in their own hands. They blame others when they should blame themselves.

Let every photographer ask himself when a mistake occurs, whether he could not have done something himself to have prevented it, by giving his assistant proper instructions, which would prevent the possibility of error.

It has been well said that the photographer should be captain of his ship, and his presence be equally necessary to its safety; even in large studios, which may be correctly described as a series of small studios worked under one management, the photographer should superintend, and by his system be generally cognizant of the principal details of his establishment.

Men we find are very much what their masters make them; their habits as a rule reflect the style of business as a whole. In well-managed, up-to-date concerns will invariably be seen bright, intelligent, tidy-looking men, whose every action shows their briskness and smartness. Every man has his place and every man is in his place. There may not be an air of hurry-scurry and bustle; it is rather like looking at some intricate piece of machinery, some parts of which go slowly, some more quickly, and some with great speed, but each moving in its appointed way at its given rate, and the whole uniting to turn out something perfected and finished from the raw materials which were put in. There is a master hand and master brain to start and carry on properly the work in hand.

Method, using the term in its widest sense, is the indispensable requisite: and the worker who is of a methodical temperament starts photography with everything in his favor. One of the signs of such a disposition is the tendency always to perform the same operation in exactly the same way. As in the earlier stages of photographic work, every operation is in the nature of an experiment, this systematic practice is invaluable. If the first attempt is a success, it makes it highly probable that subsequent attempts will also succeed; while, should they fail, it helps to locate the source of the failure, since so much of the procedure is known.

If method is so valuable in the various proceedings outside the dark-room, it becomes ten times as important when a series of operations have to be performed in a dim red light, or in no light at all. The systematic worker has a place for everything in the dark-room, and immediately after use each is returned to its customary position. The result is that he can put his hand in an instant on anything he requires, he runs no risk of putting a dish or bottle down on a measuring glass or dark slide. The bottles which contain solutions likely to be required in the dim light are of different shapes or sizes, so that he realizes by the sense of touch alone what it is which he has in his hand. The method may only assert itself in a host of little things, but it is these little things which in the aggregate make or mar our work.

If we would only study Nature a little we would see what splendid lessons she teaches us, how everything in the universe has a place "where, though all things differ, all agree." But there are so many men who go through life seeing without learning. That is the reason why great success in life only comes to the very few, and they are invariably men of method.

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LEAVES FROM MY NOTE BOOK

By an Old Hand

CUT FLOWER PHOTOGRAPHY

I HAVE recently had quite a lot of cut flowers to photograph for the illustration of a book, and possibly a few hints as to the method of working that I found successful may not be unwelcome.

Dealing first with the plates. As one will in all probability have to deal with all colors, color-sensitive plates must be used and for the majority of subjects the ortho- or isochromatic plate will fill the bill, but not without a light yellow screen or ray-filter. I have a set of the Wratten K1, K2 and K3 and have found the K2 the most useful. The one important point about the filter is that it shall be a pure yellow, the slightest trace of orange just makes the foliage too dark, for it tends to cut down the blue-greens. For the same reason the exposure must be full, for nearly all the iso plates on the market are but slightly sensitive to this particular color. Some of the spring foliage, especially that of tulips, hyacinths, etc., is quite a light yellowish green color and should be rendered light in the print.

It will be found that, except in the case of some very deep red flowers, the iso plate will be quite satisfactory, for the petals reflect so much white light that they photograph lighter than one would expect. Of course, panchromatic plates may be used with excellent results in all cases. One point ought to be mentioned and that is that color-sensitive plates give a much better rendering of white flowers than ordinary plates, for the delicate shades on white petals are really never quite white.

As regards the backgrounds a great deal will naturally depend on the artistic taste of the operator, but as a practical guide it may be stated that, as a rule, light flowers look better on a dark ground and dark flowers on a light ground. I purchased some sheets of stout art papers, 28 x 22 inches, in various shades, ranging from black to white, through greens and grays. Some light wood frames were made of half inch by one inch soft pine and the papers were soaked in water till limp and then blotted off and glued to the wood frames with hot glue and left to dry, which they did as tight as a drum head. In all cases the backgrounds were photographed and a print made so as to form a record of their photographic qualities, for one cannot always tell from the color exactly how they will look in a negative. In all cases too the backgrounds were placed sufficiently back from the flowers so that the shadows of the latter did not fall on the ground.

In most cases single flowers were wanted and I used old wide-mouthed chemical bottles filled with water and a good size pad of wet absorbent cotton was wrapped round the stems and the whole put into the mouth of the bottle. The cotton when wetted enables one to alter the pose of the flower without any difficulty. Now and again a leaf had to be coaxed into place, and sewing thread as near as possible the tint of the ground was used.

For some of the roses, and it was chiefly roses I had to take, drops of water were placed on the petals to simulate dew, but this was not always successful till I discovered that a mixture of equal parts of glycerin and water, applied from a dropping tube, did the trick.

In all cases the image was carefully examined on the ground-glass as to composition, and when necessary obtrusive leaves were trimmed off with a pair of sharp shears. I spent a lot of time over the job, but it paid in the end as I have now a big order from a nurseryman to take a whole series of 8 x 10 negatives in his greenhouses.

As much care in lighting the subjects is required as in portraiture, but in the main I found that a rather full, flat lighting the most satisfactory.

For development pyro-soda diluted with an equal quantity of water was used and a normal time of five minutes at 65° F. adopted and the resultant negatives were found to be all that one could desire—soft, full of detail and giving good color rendering.

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ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Testing Emulsion Gelatin

Wandrowsky gives the following methods for testing emulsion gelatin:

To determine the percentage of moisture, ten grams shoul be cut up into small pieces, placed in a glass or porcelain evaporating dish with cover, heated in an oven at 100° C., and weighed every half hour till it has a constant weight. The loss can easily be expressed in percentage.

To determine the absorption of water, 50 grams of absolutely dry gelatin, cut in small pieces, should be soaked in distilled water at 20° C. for half an hour, well drained, and then again weighed.

To estimate the setting point, a 10 per cent. solution should be prepared and a small quantity placed in a test-tube and stirred with a thermometer till setting takes place. The melting point can be determined by half filling a test-tube with solution, inserting a thermometer to just cover the bulb, setting by means of cold water; on immersion of the tube in water and gradually raising the temperature, if the thermometer is held by the top, the tube will drop off at the melting point and the temperature can be read off. The greater the difference between the setting and melting points, the better the gelatin.

The viscosity can be determined by using a 100 c.c. pipette, determining the time that it takes water to run out, and then finding how long it takes a gelatin solution at 30° C. to run. The time taken by the gelatin solution to run out, divided by that taken by water, gives the viscosity.

To test the firmness of the jelly a special apparatus must be made. A metal or glass rod of 11.32 mm. diameter and 20 cm. long should be filled as to its edges at one end so as to slightly round them. To the other end should be fastened a metal or glass vessel that will hold about a liter. The lower rod should be passed through an outer glass tube of about 10 cm. in length which can be held by an ordinary chemical retort stand. A beaker filled with the solid gelatin solution can now be placed below the arrangement with the point of the rod just touching the surface, and water can be poured into the vessel till the surface of the jelly cracks. This test should be repeated at different points and the mean of the weights taken. It is important in this test to set the jelley always in the same way. (W. suggests setting by the aid of running water for two hours; it is better to set by means of ice for twenty-four hours.) Changes in the making of an emulsion can also be carried out in this way, and it will frequently be found that one gelatin will stand ammonia better than another, or that one will stand the acid boiling process better. As a matter of fact it is advisable to put a sample through the processes of emulsion-making and retest for firmness, viscosity, etc.

The ash content should also be determined by burning 10 grams of dried gelatin with a bunsen burner and then heating in a porcelain dish till the ash turns quite white. Good gelatin contains as a rule 1.5 per cent. of ash, and if more than 2 per cent. is found it is advisable to estimate its content of lime, sulphuric acid and alum. The ash should be boiled with a little hydrochloric acid and 150 c.c. of distilled water, filtered and treated with ammonium oxalate, which will throw down the lime as oxalate, which can be brought to a red heat and weighed. The filtrate can be treated with barium chloride solution and the barium sulphate weighed. After filtering out the barium sulphate any excess of barium chloride can be precipitated with sulphuric acid and the solution evaporated to half its bulk and ammonia added which will precipitate the alum as aluminum hydroxide.

To test for bacteria, which are the most frequent cause of little white spots or pinholes, a 10 per cent. solution of the gelatin should be made in freshly-distilled water in a beaker that has been rinsed out with alcohol; then test-tubes should be half filled with the solution, which should not be raised to a higher temperature than 50° C., and the mouths plugged with clean absorbent cotton and they should be allowed to stand in the drying room for the usual time that it takes for the film, plate, or paper to dry. If bacteria grow, the gelatin can be freed from the same by treatment with denatured alcohol for an hour. This test should also be made with a jelly made with the washing water. If bacteria are not found, but they appear on the plates, the drying room should be disinfected with bromine water.—*Phot. Ind.*, 1936, p. 4. 23.

A Pyro Process Developer

A. J. Newton gives the following formula for the above, which will be useful now that hydroquinone has gone up:

Sodium sulphite, anhydrous .	75.0 gm.
Pyro	10.0 gm.
Sodium carbonate, anhydrous .	25.0 gm.
Caustic soda, pure	2.5 gm.
Potassium bromide	5.0 gm.
Water to	1000.0 c.c.

Dissolve the sulphite in some of the water and add the other ingredients in the order given. About five minutes' development at 70° F. is preferable. If it is required to keep the developer a long time it may be desirable

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to make up and keep the sodas as a separate solution.—*B. J.*, 1916, p. 62.

Cheap Bleachers for Sepia Tones

Boyd points out that the two following solutions may be used instead of the usual bromide and ferricyanide bleach:

Potass. ferricyanide . .	24.0 gm.
Ammonia water . . .	25.0 c.c.
Water to	1000.0 c.c.

Or

Potass. ferricyanide . .	24.0 gm.
Soda phosphate . . .	24.0 gm.
Water to	1000.0 c.c.

The sodium salt is the disodium orthophosphate.—*B. J.*, 1916, p. 91.

Editorially it is also pointed out that the following may also be used:

Potass. bichromate . .	16.0 gm.
Sulphuric acid	40.0 c.c.
Salt	100.0 gm.
Water to	1000.0 c.c.

Or

A

Hydrochloric acid, pure .	150.0 c.c.
Water to	1000.0 c.c.

B

Potass. permanganate .	4.0 gm.
Water to	1000.0 c.c.

For use, mix in order given: water 6 parts, A 1 part, B 1 part.—*B. J.*, 1916, p. 52.

Tungsten versus Mercury

(A comparison of the mercury vapor lamp with the Half-watt Mazda)

My attention was first drawn to the new half-watt Mazda lamps for photographic work by the note in one of the English photographic papers, and by the kindness of the Edison Lamp Works of Harrison, N. J., I have been able to test out the same.

The Mazda lamps were stated to be of 1700 candle-power, 110 volt D. C. This estimate was, of course, a visual one and therefore was practically of no interest to the photographer who makes his pictures with a plate. Comparison of the light sources therefore for visual luminosity was not even attempted.

For my experiments the four lamps were hung from the same support and the center of the quartz tube was placed exactly on a line with the center of the tungsten filaments. The centers of the quartz tubes were 50 centimeters apart, the same distance being preserved between the glass supporting rods of the tungsten filaments in the Mazdas. Reflectors were not used, but the lamps were placed 100 centimeters from a white wall which naturally acted as a reflector. Some incomplete experiments with reflectors were made and will be referred to later.

The ordinary mercury lamp is probably known to everyone, and the ghastly appearance it imparts to the average sitter needless of comment. On the other hand the quartz lamps give a much whiter light and the cadaverous appearance is by no means so striking. This is, of course, due to the much greater heat of the quartz tubes and the appearance of more refrangible lines than is the case with the glass tubes. I have not yet had time to obtain a complete spectogram of this tube.[1]

The practical absence of all red and orange rays and the striking line spectrum of the mercury vapor simply puts this light out of court for the reproduction of color. To prove this point would mean merely a waste of plates, for as there is practically no red in the light, any red in an object can only be reproduced other than as black by virtue of the ultra-violet rays that it may reflect.

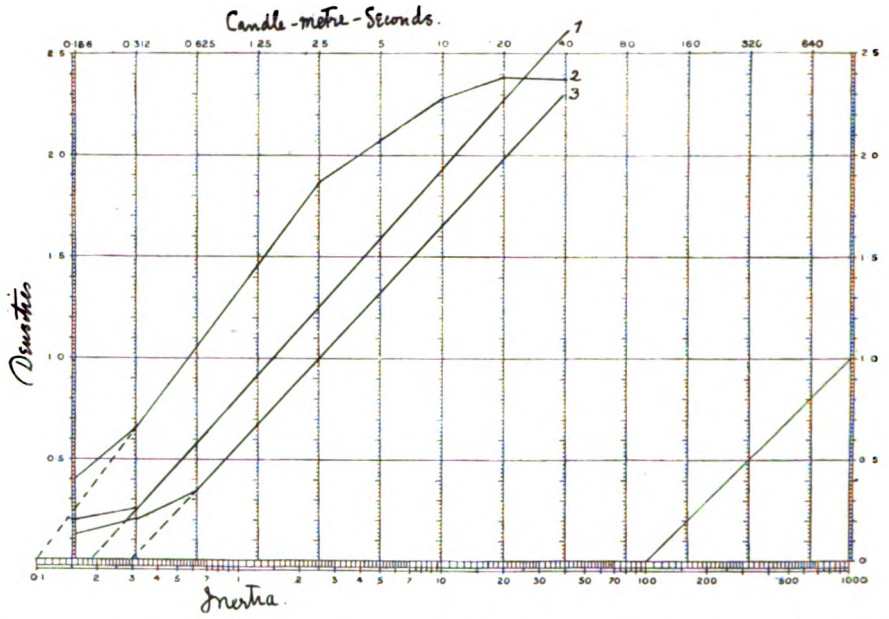
The first point about the Mazdas that strikes one is the heat they emit. No attempt was made at artificial ventilation, because the studio in which the experiments were carried out was sufficiently large to obviate any feeling of discomfort; this is referred to later. But experiments were made to find what might be considered the average rise in temperature for printing purposes. At a distance of 50 centimeters from the center of the filaments the rise in temperature in half an hour was 45 deg. Fahr. In the case of the mercury lamps the rise was 4 degrees. This is, of course, of some importance when using the lamps for printing purposes.

The next point was the glare of the lights. Using the unshaded lamps the light was so brilliant as to cause sitters to screw up their eyes and with but real side lighting to reduce the pupils of the eyes to pin points. Various media were tried as diffusing screens, tracing cloth, fine linen, muslin, tissue paper, and scrim. The most effective medium was found to be the finest nainsook linen and wetted; but it is not practicable because the heat dries it so rapidly that it would be a nuisance commercially to keep such a screen wet. Various screens were made by the soaking of gelatined glass in different solutions so as to obtain impalpable precipitates, but these were finally abandoned as not commercial or less so than the finest tissue paper that I could obtain. Incidentally I may remark that rice starch suspended in gelatin or calcium tungstate precipitated in the same are actually the best diffusing screens, if the least loss of light is taken into consideration; but such screens are very liable to pick up dirt and they cannot be readily cleaned as the gelatin is naturally hygroscopic. Although I have not tried it I believe that cellulose acetate carrying rice starch or artificially matted by the use of a partial non-solvent would be the best screen to use, as it is non-absorbent. On the other hand the cost would be much greater.

To actually test the photographic power of the lights a sheet of white blotting paper was fastened to a board. The albedo or reflecting

[1] Since writing the above I have obtained some spectrograms and seven lines are visible in the red; only three of these are due to mercury, the others being probably oxygen lines.

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power of this paper was found to be visually 79.5 per cent. The paper was placed in such a position that the light from the lamps was incident at an angle of 45 degrees, and the camera was placed parallel with the paper. The lens was focussed on the surface of the paper and in the plate holder was placed a sheet of glass bearing accurately measured patches of density, ranging from 1 to 3.01, which corresponds to a range of opacities of 1 to 1024 in geometrical progression. Plates of known speed were then exposed in contact with this density plate, and after the usual operations of developing and fixing, etc., the resulting densities were measured and charted with the following results:

	Hg.	M. 1	M. 2
Ordinary plate . .	1	0.6	1.8
Panchromatic plate	1	...	1.0

The "ordinary" plate was a non-color sensitive plate and the panchro one sensitive right up to the red to wave-length 7200.

The results are given in terms of exposure, for it would merely cloud the issue to give the actual readings. The above are the mean of twelve exposures under each condition, this being taken in order to even any possible variation in the voltage; though this was also practically compensated for by stopping down the lens so that the exposure was sufficiently prolonged to compensate for the same.

The following chart is interesting, it proves at once the relative actinic power of the two lamps and the effect of the diffusing screen. An ordinary plate was used and curve 1 is that of the quartz mercury lamps, curve 2 is that of the unscreened Mazdas and 3 that of the same with the tissue-paper screen in front of the lamps. It is at once apparent that the diffusing screen has cut down the power of the Mazdas to one-third. It is quite possible that this reduction might be reduced, but after all it is an open question whether it is worth the trouble of finding another diffuser for the simple reason that the actual exposure with the tissue paper was one second with a Seed 30 plate with the lens working at F/8 (real aperture). The chart also shows most clearly the great overexposure of the plate with the unscreened lamps. In the case of the panchro plates the results were to me a little surprising. I fully expected to find the Mazda lamp far more powerful than it turned out to be. As a matter of fact the Mazda and the mercury lamps were of the same rapidity with the tissue paper; this means, of course, that the panchro plate is actually faster in the ratio of 1 to 1.6. In other words the panchro plate was actually the same speed to the screened Mazda as to the naked mercury lamp.

This naturally raises the question as to color rendering. And on this point I made absolutely no comparative experiments for the simple reason that as already stated it would be a waste of plates. Here the Mazda will score very heavily, particularly with a correct color luminosity filter and a panchro plate, which is the only correct way to work. The use of a color filter with a mercury lamp would be mere fooling. No attempt was made to find the correct filter for the Mazda lamps, in consequence of pressure of other work, but these will be attempted if possible in the near future and probably will have to be a pale yellowish green.[1]

To test the lamps for printing, the same

[1] Although not complete, my experiments have so far shown that a filter of tartrazine, phenosaffranine and aesculine is the best combination.

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density plate was used and placed at a distance of 50 centimeters from the centers of the lamps. As typical of the printing-out papers Solio, a gelatino-chloride paper, was used. The results were as I expected; under the mercury lamps the print was flat and wanting in contrast, while with the Mazda the contrast was exactly the same as the test plate. The explanation of this fact is that all such emulsions contain silver chloride and an organic salt of silver (citrate or tartrate). The sensitiveness of the former is essentially to the ultra-violet and violet, while the organic salt is sensitive to blue, green, and yellow-green, and cutting out the ultra-violet reduces the action on the chloride and proportionately allows more action on the organic salts and increase of the less refrangible rays would also have precisely the same effect. This is a well-known fact that has been used for years.

In the case of platinum paper the sensitive salt is ferric oxalate and this is essentially violet sensitive and insensitive to green and yellow, therefore one would expect greater rapidity of printing under the mercury lamps, as a matter of fact the printing is four times faster than with the Mazdas.

I have avoided giving too many data of the actual experiments, because the average photographer is interested in results rather than in theory, but there are several points to which I may call attention that may be of some practical use.

The Mazda lamps will enable anyone to set up a studio anywhwere and be absolutely independent of daylight. By the use of panchro plates and a color filter he will save a lot of retouching. I believe that with four such lamps fitted into a neat cabinet with diffusing screen in front and with parabolic reflectors behind so that the position of the lamps could be altered as regards the foci of the parabolas one would be able to vary the lighting at will. Connecting the cabinet with a flue and the outside air, or a small fan, would entirely obviate any heat troubles. Such an arrangement would be ideal for the copying of pictures or colored objects generally and for the production of autochromes.

The actual exposure with a Seed 30 plate and the two Mazdas and the tissue-paper screen with a lens working at F/8 (real aperture) was one second. Practically the two lamps are just 1400 photographic candle-power without the diffuser.

It would be extremely easy to arrange one of these lamps for enlarging, and a small lamp with the filaments in the form of a straight grid or a helical screw would be excellent for small projections and photomicrography, but the bulb tip would have to be placed in another position. Such lamps would also be useful for printing machines.

E. J. Wall, F.R.P.S.

Syracuse University.

VIEWS AND REVIEWS

The Kodak on the Farm

This attractive little booklet, recently issued by the Eastman Co., points out the many profitable and practical features on the farm that can be utilized with profit by the photographer.

Today we must realize the farmer goes not blindly at his business. With high wages and high cost of living he must make every animal, every acre, pay a profit. He must experiment and must have a record of such experiments for future guidance. Photographs, with notes, best serve the purpose. What lime did for this meadow and what nitrate of soda did for that pictures showing comparative results are worth while.

The cornfield that had a commercial fertilizer compared with the cornfield that had so many tons of manure to the acre, each picture taken the same day—that's a record worth having. Photographs as well as the scales should show the condition of the carload of feeders at the time they were purchased and again at stated intervals, such pictures, of course, to be accompanied by a record of the rations—both grain and roughage. Such illustrated information is both illuminating and invaluable. You visit the State college or a famous stock-farm—make your visit doubly valuable by photographing buildings, stanchions, stock, whatever there is that contains an idea that will be of value to you. Photographs of fences, ditching, and buildings on your own place are interesting and valuable.

There is live stock to be sold—a photograph, sent by mail perhaps, will serve to interest a prospective customer.

Photographs of the young orchard showing the growth of the trees and of the mature orchard showing different methods of trimming—in these and in a score of other ways it pays to keep a kodak record.

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The British Journal Photographic Almanac for 1916

The war had its effect in reducing the advertisement pages of the *British Journal Almanac*, but the 1916 volume, which has just been issued, is quite portly enough for comfortable reading. Novelties in apparatus and material are for the time being to all intents and purposes nonexistent; so the space generally given over to them is occupied by a summary of the principal firms in the photographic industry in British, allied, and neutral countries, designed mainly to show the extent of British resources in this direction.

The editorial deals with printing processes of all the kinds now in vogue, and serves to remind its readers of many methods and dodges which otherwise might pass out of memory. There is the usual summary of articles published during the year, which many find very useful for reference.

The almanac is the one indispensable photographic book of the year, combining as it does the features we have already enumerated with a number of standard formulæ, tables, etc., and a collection of advertisements which are constantly referred to by professional and amateur alike. The system of indexing these is a valuable one, and adds greatly to the utility of the volume.

Price, 75 cents paper; $1.00 cloth. Supplied through this office.

Penrose's Annual, 1916

Penrose's Annual, 1916 (The Process Year-Book) comes to hand again, and is as well printed and produced as in the past. As its sub-title indicates, it is a record of art and technic in process engraving, printing, and allied industries, and this year's volume keeps up its high standard both as regards its literary and pictorial contents.

Examples of all the latest methods of reproduction, including photogravure, three- and four-color printing, litho offset, halftone and line work, are given. Some of the illustrations are extremely good, and should attract a ready sale for the book even among those who are not interested in the branch of work with which it deals.

The editor, W. Gamble, F.R.P.S., deals with "The Position and Prospects of Process Work"; A. E. Bawtree has an article on "Some Commercial Developments in Banknote Printing," with some very interesting illustrations; "Scientific Research and the Photo-Engraver" is dealt with by Dr. C. E. Kenneth Mees; "National Advertising in Posters" is an interesting illustrated article by Walter J. Avery; a topical article by J. R. Riddell, "Capturing Germany's Color-printing Trade," will appeal to a great number of readers of the book; and "Grain in Negatives," by Ernest Marriage, will interest photographers; "Transfers in Tone for Photo-Litho," by W. T. Wilkinson; "A Photolithographic Method," by Chas. Harrap, and "Halftone for Offset Lithography," by S. J. Garratt, should be useful to the lithographer. Other articles include "Reflections on Present-day Conditions in Photo-Mechanical Work," by Max Levy; "The Reproduction of Color-screen Transparencies," by E. A. Biermann; "Color-sensitizing," by Otto Pfenniger; "The Absorption of Chemicals in Earthenware Dishes," by H. Schenkkan.

Penrose's Annual is obtainable from Messrs. Tennant & Ward, 103 Park Ave., New York City, Agents for the United States. Price, $3.00, prepaid.

Send for One

We have received an exceedingly attractive booklet from James H. Smith & Son Co., of Chicago, makers of the "Victor" line of Flash Powder—Standard flash equipment for all classes of work—and other photographic specialties of superior quality.

The ever increasing demands for space being made upon the business sections of our cities, makes it increasingly difficult each year for the photographer to obtain a good business location possessing a large, unobstructed skylight for his operating-room.

Furthermore, those fortunate enough to have such a skylight in an ideal business location, are constantly hampered by weak daylight, especially during the busy winter months when cloudy days are most prevalent.

The possession of some other source of operating light is therefore essential to the most efficient and profitable conduct of every photographic studio, so if interested, send for one of these booklets.

Bromide

Both technical and U. S. P. descriptions of this commodity continue in scanty supply and strongly held at a minimum of $5 by leading manufacturers, while maintained at $6 and even at $6.50 by second hands. Reports to the effect that the recent sharp uplift of prices for this article has been due to the operations of a syndicate of makers in Michigan, Ohio, Virginia, and West Virginia are not credited by those in a position to know, as it is obvious that the growing shortage, due to recent heavy sales on contracts to European users, is alone responsible for this upward movement of prices. Seemingly, this extensive export movement of bromine can not be forbidden by the United States Government authorities or virtually prohibited by a high export tax, without enactment to this effect by Congress. Efforts to prevent further heavy shipments of this commodity, to foreign countries have recently been made in vain by manufacturers of bromides who complained of this export movement to the Secretary of Commerce only to be referred to a special investigator in New York City, who informed them that the government was powerless to interfere with this business.—*Oil, Paint and Drug Reporter.*

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A Wonderful Discovery

Dr. Manuel Perez Amador, director of the Government Institute for Biological Research in Mexico City, claims to have discovered a method for taking radiographs without the use of any of the usual *x*-ray apparatus. He dispenses with high-tension coils, Crookes tubes, radium, etc., and in place thereof uses an ordinary electric bulb lamp with a metal shade, the inner surface of the shade being coated with crystals of highly purified white sulphur. A demonstration is reported to have taken place in the presence of a number of scientific men, when the image of the skeleton of a lizard was secured on the photographic plate by this means. The reflected rays penetrated the body of the lizard and the protecting dark slide.

This announcement, says the *Photographic Dealer*, will doubtless cause considerable excitement in surgical circles, and it certainly opens up a wide field for experimental and research work. We are not told whether the filament of the lamp was carbon or metallic; if it is heat which excites the sulphurous crystals, it will probably be a carbon filament lamp; but if it is light rays which has this effect, then a metal filament lamp would suggest itself as being more suitable.

There are quite a number of salts which give off invisible rays of one kind or another, in the same manner as zinc sulphide, in the form of luminous paint, gives off rays which come near the violet end of the spectrum, and are visible. The weakness of the rays emitted from salts, as compared with Röntgen or so-called *x*-rays, has prevented a practical application; but now that Dr. Amador has succeeded in making a radiograph from rays emitted from the refined crystals of sulphur, with the aid of such elementary apparatus as an ordinary electric lamp and tin shade, it is possible that the discovery may lead to remarkable developments.

We well remember being called in to participate in some experiments which resulted in the production of *x*-rays about two days after Professor Röntgen announced his discovery, and we had the pleasure of being associated with the publication of the first radiographs which were produced in this country. It would be particularly interesting to follow up Dr. Amador's discovery, but, unfortunately, we fear there is a difficulty in the way of procuring sulphur crystals in such a highly purified form that they are white. Possibly the bleaching process is simple enough to the chemist, if not an entirely pleasing one, although sulphur as we know it has always been associated with a decidedly yellow color. However, we shall await with interest further developments.

Photographs of the Zodiacal Light

Gegenschein and other large faint objects have been made by Prof. A. E. Douglass, who described his method as follows at the California meeting of the American Astronomical Society: Absolute freedom from city lights is essential. He uses a lens of large aperture and short focus, making a small picture; also a panorama mechanism with a curved film and a sort of focal-plane diaphragm passing a curved opening across the front of the film. Multiple exposures, simultaneously or in immediate succession are made on the faint object up to any number desired. These are all developed; then they are placed one above the other in careful registration and prints made from this compound negative. If necessary a similar compound positive is made, from which a final negative with any desired contrasts is obtained.

Robert Krayn, who introduced three-color carbon tissues in Germany, and was the patentee of a process of making line and mosaic screen plates by the superposition of stained sheets of celluloid, died in Berlin on December 3, 1915.

Platinum is a scarce commodity nowadays. Therefore, the news that a fresh source of supply has been discovered in the mountains near Ronda, in Spain, is somewhat cheering. The Spanish Government is said to have taken possession of the ground, and the work of developing the mine will be carried on under the direction of the Geological Institute.

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Murray Hill Evening Trade School

A free class in commercial photography is being formed at the Murray Hill Evening Trade School, 237 East Thirty-seventh Street, New York City.

This course is intended for workers in the trade. The students will be expected to know printing, developing, and the general principles of photography. This instruction is to be devoted to advanced lines of commercial photography, especially in its application to the photo-mechanical processes, photo-engraving, photo-lithography and three-color process work.

The class work in these branches will be covered by lectures, demonstrations, and practical work.

Those interested are cordially invited to enroll at once. Registration, Monday, Tuesday, Wednesday, and Thursday evenings, 7.30 to 9.30.

An Enterprising Exhibit

The Aune Studios of Los Angeles, Cal., is one of the most attractive and prosperous in this country. Mr. S. Aune, the proprietor, gave an exhibit of photographs by leading photographers of America in his studio from January 15 to February 15. The exhibit was very successful and a great advertising card for a mid-winter opening.

Big-game Camera is Silent

Carl E. Akeley, explorer and big-game photographer, has obtained final patents on a clickless, rapid-fire, moving-picture camera. The new device, which its inventor says will make possible the photography of hitherto unphotographed forms of wild life, is always ready for action and requires no elaborate adjustment on a tripod. It was devised by the explorer so that he might record "a supreme moment."

The Akeley apparatus is inclosed in a round box, made of aluminium, with the lens protruding from it. Its base to the uninitiated is not unlike a big pie pan. The main part is 7½ inches in diameter, and with the base the machine is only 13 inches high. It might pass for a diminutive searchlight or some kind of a war device. There is nothing about it that suggests the conventional moving-picture camera. It is suspended on a curved arm, and by means of a universal joint can be swung on the instant in any direction.

As the turning of the handle which moves the film is not heard, the operator can photograph beasts and birds without alarming them.

The first perfected model will be part of the equipment of the Asiatic expedition which is to be sent out by the American Museum of Natural History.

Kite Photographs of a Volcano

A series of remarkable photographs of the crater of Kilauea, Hawaii, have, according to *Science*, been obtained, by Mr. C. F. Haworth, by means of kites during the past six months. The primary object of taking these pictures was to secure additional data for use in the construction of the large naturalistic model of Kilauea that has been under way for the past three years for the geological department of Harvard University.

Photographic Department, New York School of Fine and Applied Arts

A department of photography has recently been instituted in the New York School of Fine and Applied Arts, under the able direction of Miss Pearl Grace Loehr. Miss Loehr has won an enviable reputation as a metropolitan photographer whose work is of high order. She is known to the fraternity as past-president of The Women's Federation of Photographers, a position she filled with rare ability, and she is eminently fitted as first instructor of photography in this finely established school. A special class in artistic photography under Miss Loehr will be included in the curriculum for the vacation period at Belle Terre, Long Island, beginning July 5. Catalogues will be supplied on application.

REPORT

Professional Photographers' Society of New York

Twelfth Annual Convention, New York City, February 29 and March 1 and 2

Opening Session

The Convention was called to order at 10.45 A.M., by President E. B. Core, who gave an address of welcome to the 210 members present, who had assembled in the Winter Garden of the Hotel McAlpin.

After a short business session Mr. Core called on Mr. John Schneider, of the Baker Art Gallery, Columbus, Ohio, to deliver his address on "Business Getting," which he gave in a clean-cut, straight-forward manner. A few of the important points in his talk were: Advertising in the newspapers, persistently, is the best way of getting business. Uniformity of your showcase display, as to color of prints, size, and subjects; for instance, never have a mixture of sepia and black and white prints, that is disturbing. A display of all mother and children portraits, or a display of men's portraits, or a display of young society ladies, is better than a mixture of the various kinds; it shows a unity of purpose, creates a demand to have father or mother and the children photographed. He also said that our professional sense gets the best of our business sense; that is, we devoted three-fourths of our time to the artistic sense and play with the business sense only one-fourth of our time. Mr. Schneider was highly commended for his very interesting and instructive talk.

Mr. MacDonald replied to Mr. Schneider's talk on the opportunity to display pictures. He said that the man who neglects to avail

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himself of the opportunity is a fool. He said that some years ago, when he was winning prizes, his success was due to the fact that his exhibits were always of one thing and kind, so that nothing could distract attention from his exhibit.

Mr. Core then called on various men in the audience, each to give a five minute talk. It was astonishing the number of good suggestions that were freely given from the experience of those called on. Some of those who were called for talks were: Hollinger, who has lost none of his ability to get his audience in good humor; Geo. Harris; Clifford Norton; Miss Stuart; Mr. Cunningham; President Kennedy of the Canadian Photographers' Society; Mock; Beach; Kehrns; Morris; Ollivier; Miss Smith, and others; in fact, to mention all the names would be to mention almost everybody in attendance. The experience was quite remarkable and many were the pleased comments.

Afternoon Session

In the afternoon, Mr. Henry R. Poore was introduced to the members and gave a highly interesting and instructive talk, "The Primer on Composition as Applied to Photography." He selected four principles of art, out of many, that are not dogmatic, but *imperative*. They are (1) Domination and sacrifice; (2) Opposition of lines and light and shade. (3) Sequence. (4) Balance. All of which he described in a manner so simple that everyone was able to grasp his idea and meaning, which he illustrated with photographs and copies of paintings showing the above four principles.

In the evening, February 29, Mr. L. B. Jones, Advertising Manager of the Eastman Kodak Company, gave a very fine illustrated lecture on "The Advertising Value in a Photograph," which was greatly appreciated by a large and attentive audience.

Mr. Buxbaum's demonstration of his method of "Enlarging with a Soft-focus Lens" was highly instructive and gave a new slant to enlarging. Thus ended the first day's session.

Wednesday, March 1

Mr. Core called the meeting to order by announcing the program for the day, which was entirely devoted to demonstrations. He read two communications received by him, one from Frank Scott Clark and the other from J. C. Abel, who had been scheduled to demonstrate and speak. At the last minute both men were unable to come, much to their regret and ours too.

Messrs. Beach, Edmundson and Conklin gave demonstrations, with the aid of two professional models, and held the attention of those present. Both artificial and daylight were the medium used. The artificial light used were the Cooper-Hewitt light, the Halhm twin arc light, and a 3-unit Edison nitrogen lamp. The plates were developed and prints made from them and shown at the afternoon session.

At 12.30 the ladies who attended the convention were the guests of the Metropolitan Section at a luncheon at Shanley's restaurant, Broadway and Times Square, and a matinee at the Hippodrome. Mrs. MacDonald and Mrs. Hoyt chaperoned the guests and a thoroughly enjoyable time was had by all.

Wednesday Afternoon Session

In the afternoon Messrs. Hill, Ellis and Mix gave demonstrations setting forth their ideas. Hill posed his model showing how he produces the graceful lines of the debutante and society ladies of New York's "400." Ellis posed his model to the best advantage and showed the members his way of producing various decorative effects. After Mix's talk and demonstration, Hollinger gave one of his famous talks which held his audience. Then Goldensky was called to give a talk, which by the way was very fine, telling of his ideas and ideals in a most unusual and forceful manner. MacDonald said that was the best speech that Goldy ever made. Pirie, by the way, was one of the busiest men at the convention, always on the job.

Wednesday Evening

The Banquet was held in the ballroom of the Hotel McAlpin. About 200 attended. There was music, song, goodfellowship, and fine speeches. Mr. Beach, of Buffalo, was the toastmaster, introducing the speakers with a few witty remarks. Harris, Phillips, Mock, Hoyt, MacDonald and Core responded in their well-known manner, MacDonald, however, sprung a surprise, by giving a serious, thoughtful talk on "Preparedness." Needless to say that he held the attention of everybody and gave them something to think about. MacDonald, by the way, is in great demand as a speaker on "Preparedness," showing another side to this versatile man. Mr. Nolan, proprietor of a Yonkers newspaper, and Mr. Cashin, county clerk of Westchester County, friends of Pop Core, were his guests and also on the list of speakers. The Irish wit these two men turned loose on each other and on Geo. Harris, Ry. Phillips, Mock, and others was startling. Their witty remarks brought forth roar after roar of laughter. "Pop" Core was presented with a very handsome silver loving cup. After the banquet, there was dancing until 1 A.M. It was one of the most successful affairs ever given and those who attended will not forget it in a hurry.

The exhibit of photographs was of a very high standard. Eugene Hutchinson, of Chicago, had a display that was very much admired. Hollinger sent two prints done in his usual good style. Frank Scott Clarke had a wonderful display of about a dozen prints, that had a peculiar charm; they received a great deal of attention. MacDonald's six prints were characteristic of his handling of men, showing strength, character, and unusual light effects. Other exhibitors were Falk, Conklin, Hill, Steffens Hollinger, Noetzel, Bushong, Goldensky, Phillips, Ellis, Dooner, Mix, Mock, Beach, McGeorge, Lippnell, Frey, Marceau, Kalt, Buxbaum, Lifshey, Hoyt, Hilton, Haas, Bella Johnson, Knaffl Bros., Baker Art Gallery, Garo, Haley, Sr. and Jr., Ollivier, Gardiner,

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Underhill, Stage, Russoff, Strohmeyer, Schloss, Norton, Parker, Hallem, Towles, Sanford, Dunning, Hale, Stuart, Smith and Puffer.

This was the most successful convention and best and persistently advertised that New York has held, and the credit for it all belongs to "Pop" Core and his assistants, who all worked hard to make it the success that it proved to be.

Last Session

Was held Thursday morning. Miss Jessie MacDonald read the manuscript of J. C. Abel, who was the Masked Marvel and who was unable to be present. The subject of his talk was "Why Men Fail." Miss MacDonald's reading of the manuscript did full justice to the excellent paper prepared by Mr. Abel.

The following officers were unanimously elected for the coming year: E. L. Mix, President, New York City; J. E. Hale, Vice-President, Geneva; Chas. Hallem, Secretary, New York City; F. E. Abbott, Treasurer, Little Falls.

New York City is the next place of meeting.

Exhibit of the Department of Photography, Brooklyn Institute of Arts and Sciences

The twenty-sixth annual exhibition of the Department of Photography of the Brooklyn Institute of Arts and Sciences will open on Thursday evening, April 27, and remain on view until May 21.

The department is fortunate in having been able to secure the Tissot Gallery of the Brooklyn Museum, on the Eastern Parkway, a better gallery in a more central location than has been possible in the past. The exhibition will be open to the public daily from 10 A.M. to 6 P.M., on Sunday afternoons from 2 to 6 and on Thursday evenings from 8 to 10.

Last year's exhibition, the quarter-centennial one, was unfortunately held in a totally inadequate gallery which was not only inaccessible to the public but was so small as to seriously cramp the few pictures that could be hung. As there is ample room this year it has been decided to make this a noteworthy anniversary, and breaking with former custom, which required absolutely new pictures, give this exhibition the character of a review of the work that has been done by the Studio and Department members. It is felt that this will give the public a better idea of the really excellent and serious work that is being done in Brooklyn, as each exhibitor will have the opportunity of presenting a number of examples of his best work of several years, instead of being limited to the work of the past twelvemonth. In addition, the Department will make this an opportunity to return many past courtesies by inviting some well known photographic workers to exhibit who are not members.

In order to prevent too great congestion of the galleries and hanging-space, Department members will be limited to the hanging of six pictures, and invited exhibitors, non-members, to three. To assure uniformity of presentation and unity in the exhibition, the pictures are to be mounted on standard size mounts of a uniform light tone and shown under glass without frames. A private view and reception will take place on the opening night, when the members will entertain the usual large number of guests; the galleries being decorated with potted plants through the courteous coöperation of the Department of Parks.

As there are a number of workers of marked individuality in the Department, a strong and interesting exhibition is assured. It is fortunate that so excellent a gallery has been obtained, for this group of workers has suffered in the past from a lack of opportunity to show their work to other than a limited circle in their own city, and consequently they are not as well known there as the quality of their work deserves. Despite this handicap, the Department has sent group exhibits to most of the prominent shows in Europe and the United States, and its members are consequently better known abroad than at home. As the department has always aimed at the development of its newer members, feeling that group-work is more valuable than direct teaching, the exhibition will doubtless show forth a number of new workers, and should serve to attract outsiders to membership in that remarkable organization, The Brooklyn Institute.

Motion-picture Photography

Owing to the growing interest in motion-picture photography, beginning with the May issue we shall have a department devoted each month to this interesting and profitable subject, conducted by Samuel Wein. Mr. Wein is chief chemist of the Universal Film Co., and is well known as an authority in his field. His practical articles in this Journal and elsewhere have attracted more than uncommon interest, and this new department, under his direction, is sure to be popular and helpful.

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THE WORKROOM

By the Head Operator

CLEANLINESS IN THE WORKROOM
CHEAP AND SERVICEABLE ADAPTERS
BROWN MOTTLES IN STOCK
A PHOTOGRAPHER'S WASH TRAY
HOW TO TAKE FILM TITLES
PRINTING MOVIE-POSITIVE COPIES
A RADIATOR FOR THE DARK-ROOM
REPRODUCTION OF COLOR-SCREEN TRANSPARENCIES
VIGNETTING ON DEVELOPING PAPERS
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ECONOMY OF DEVELOPERS
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PLATINUM SUBSTITUTES FOUND
HOME-MADE DISHES

CLEANLINESS IN THE WORKROOM

LIKE other highly specialized manufacturing processes, the technical part of photography requires special conditions under which the work must be done if the best possible results are desired. One of these conditions, a very important one, is cleanliness. Cleanliness from one end of the studio and workrooms to the other. Dust, waste, and chemicals in the wrong place mean much waste of material, added expense, disatisfied customers, and a host of other ills. In visiting the workrooms of different photographers the most noticeable thing is that the photographic and financial success of the man is reflected all over the establishment. A photographer who takes pride in his profession and is constantly aiming to improve his work will usually be found to be exacting in the appearance and cleanliness of his workrooms, as well as the operating and reception rooms, and requires the same from all his assistants. Seldom does such a careful man complain to the dealer or manufacturer that the plates and paper are at fault, that they are covered with pinholes and other defects. Having removed the cause, he has prevente the defects. Dust is a very elusive thing, and, no matter how carefully plates are dusted, pinholes will often continue to manifest themselves until the policy of keeping the workrooms as clean as possible is adopted. Chemical dust is still more elusive, and a spilled bottle of chemicals or solution will often continue to give trouble for several weeks, before all the dust can be eliminated. An example of the importance of absolute cleanliness in the workrooms used for photographic work can be seen in the modern motion-picture studios. These workrooms are kept as clean and free from dust as is humanly possible. The air provided for ventilation is filtered, to remove all dust and chemical contamination. The workers themselves are required to wear dustless clothes, and all possible ways for the entrance of dust are prevented. If it pays the motion-picture producers to take these extreme precautions, why should it not also pay the producer of "still" photographs to have his workrooms as clean and neat as possible? It does!—CHAS. I. REID.

CHEAP AND SERVICEABLE ADAPTERS

THESE are days of economy, and any little hint on that subject will find a ready acceptance. Small lots of an odd-sized plate, in perfect condition, may be offered by one's dealer at a reduction, the difficulty arising in securing adapters easily and cheaply, making it worth while to reap the full benefit of the deal. I have purchased several lots of such plates, and met the question on the spot with the expenditure of—a little time only. If the following directions are carefully followed, anyone can do as I have done.

The adapters can be made in two styles: No. 1 for book-form double dark slides or single slides loaded from the back, where the plate receives sufficient pressure from a spring behind it to keep it in proper position; and No. 2 for solid double or single metal dark slides, such as are loaded from the front, having little or no pressure on the plate. This latter adapter is an improvement on the ordinary wooden one with turn catches, as it allows no stray light to pass behind the edges of the plate, the same being closely masked.

No. 1 Adapter: Take a piece of cardboard about the ordinary thickness of a plate, and cut it to fit the dark slide conveniently, but not too loosely. Lay a plate or a piece of material cut the size of the plate to be fitted on this cardboard, and centre the same. Mark round the edges of plate or material with a pencil, and cut out along the markings with a sharp-pointed knife. A cardboard frame, into which the plate should fit easily, has now been made. Any roughness of inner edges may be gently rubbed down with very fine glass-paper. Next cut four strips of black paper—two the full length of the framework and two the full width—these strips to be wide enough so that when placed in position along the edges they will overlap the opening about one-eighth of an inch. Paste the pieces in position, on one side of the cardboard only, so that a rabbet is formed all round the opening, taking care to remove any paste squeezed over the edges. Set aside to dry, or force dry by gentle heat. This adapter, if handled with a little care, will last a considerable time.

No. 2 Adapter: After completing the front, as

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already described, cut a strip of black paper the full width of framework, and sufficient depth to overlap the opening about a quarter of an inch. Paste this to the back of framework, so as to form a pocket at the narrow end of opening. Next cut a piece of black paper the full size of adapter, and paste it to edge opposite the one just treated. This should fold back clear of opening and form a hinged cover. To use the adapter, fold back the loose portion of paper cover, slip the narrow edge of plate into pocket, and lay into position. Replace the cover over the plate, and place the plate, together with adapter, into dark slide. It is almost impossible to dislodge the plate from its position. In pasting, the cardboard should receive the paste, not the paper.—*British Journal of Photography.*

Brown Mottles in Stock

Occasionally we receive a complaint from a photographer enclosing prints which show a peculiar black mottled effect in the stock which is only noticeable when the print is examined by transmitted light. This trouble has every appearance of a defect in the raw stock, as the mottles do not appear in any particular place in the print but are scattered and of peculiar formation.

After a number of tests at our research laboratory, a similar effect was produced by using a very strong acid shortstop on the prints, leaving them in this bath from 10 to 45 minutes. After removal a number of transparent spots were noticeable which immediately disappeared after the prints had been toned in a hypo alum bath, the temperature of which was not allowed to rise above 120° F. By allowing the temperature of the bath to rise from 130° to 160°, however, these spots became a dark brown, which appeared black to the naked eye when the prints were dried.

Extreme care should be observed in purchasing acetic acid, as it is made of several different strengths, and every photographer should insist on the commercial grade when purchasing from the local supply house.

The following list, published by Merck, shows the different grades:

No. 1 Acetic acid . . .	99.5	per cent.
No. 2 Glacial acetic acid .	96.0	"
No. 3 Acid acetic . . .	90.0	"
No. 4 Acid acetic . . .	36.0	"
No. 5 Acid acetic, diluted (commercial)	30.0	"

The No. 5, or as it is commonly known No. 8, or 28 per cent., is only one-third as strong as the glacial acetic and should always be purchased for photographic purposes unless glacial is specified. —*Portrait.*

A Photographer's Wash Tray

Rather than pay two dollars or more for an enameled wash-tray for washing prints I devised the following, at a cost of about fifteen cents, which has served the purpose for about four years.

First I cut out the bottom piece, which measured 12 by 18 inches, and then two end pieces $3\frac{3}{4}$ by 12 inches, and two side pieces $3\frac{3}{4}$ by $19\frac{1}{2}$ inches. The length of the sides allows them to lap over and be nailed to the ends. The corners I squared as true as possible to make tight joints.

These five boards were then covered with fresh white oil-cloth, bringing the edges over and tacking along the opposite side with copper tacks.

When this was done the sides and ends were nailed around the bottom with eightpenny wire nails, countersinking the heads, of course having the oil-cloth on the inside.

A coat of asphaltum paint on the outside for protection against water completed it and it has never leaked a drop.—L. B. R.

How to Take Film Titles

No motion picture may properly be shown to the public without explanatory matter of some kind. Some films require little assistance from the "doctor," but every film needs at least one title. There are, of course, different kinds of explanatory matter.

The main title is self-explanatory, but the most widely employed device is the sub-title. It is so called because it acts as a guide over stumbling blocks, that is, when something cannot be explained in pictures. It is used in all types of motion pictures.

But the screen message is practically confined to the regular photoplay. This may be in the form of a letter, newspaper clipping, or telegram.

The methods in vogue at the various studios differ, but in all cases the titling details are attended to after the play has been put on.

Undoubtedly the most simple and inexpensive way is to cut the letters carefully out on white cardboard. If, however, you do not wish to go to this trouble, engage a sign painter to draw them on a sheet of white cardboard.

If you adopt the former method you place the letters on a flat surface against a black background, allowing an equal space between each word. To photograph same correctly you must place the camera box on a stand directly above and arrange the lens so that they face down toward the middle of the title.

Use positive stock in the camera, and be sure to turn the emulsion side away from the lens, as if this is not done your title will be filmed backward.

Why I advise you using positive stock is because you obtain greater contrasty results, but you cannot be too certain of the correct exposure, which you should test with a film meter.

In developing take good care that the letter is transparent and on an opaque ground. The following formula has been tested and proven:

Glycin	$1\frac{1}{4}$ lb.
Sodium sulphite	$3\frac{1}{4}$ lb.
Potassium carbonate . . .	6 lb.
Water	60 pints

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After you have developed the negative, print a positive from the same and use it as the title negative. Attach this to the complete negative in the correct place and join with acetone cement.

You allow one foot of film for each word, so it is easy to calculate the footage necessary for each title.

Although a well-lighted room is suitable for taking titles, you will obtain more satisfactory results if you can provide artificial light, one lamp at each side of the camera.—ERNEST A. DENCH.

PRINTING MOVIE-POSITIVE COPIES

To one not conversant with cinematography, the next stage after developing the negative would appear to be printing the positive; but there is another process, in between, editing. This work consists of inserting such titles as are necessary to make the film clear and using the pruning knife freely in spots where the film lacks interest. If you do this you will only waste negative stock, but if you leave this important detail until after the positives are printed, you will have waste of raw stock on every print to account for.

The printing machines used by the regular producers are too costly for the average amateur, who may make a passable printer out of his camera.

The lighting is an important factor, and electricity is undoubtedly far superior to anything else. Failing this, however, either gas or acetylene may be substituted.

You have to fix up the camera, and you start by taking away the lens. Open the shutter wide and equip the top with an arm, to which attach a spindle, to hold the negative film spool. Now place the camera on a table or bench against a wooden partition, cutting a little opening so that the electric bulb or gas burner, which you install near same, reflects a light.

Blacken a cardboard tube; place one end in the camera opening and the other in the partition entrance. This will carry the light into the camera. Fill the upper film box with the unexposed positive stock and insert same into the camera; thread the negative via the upper slot, after which thread the positive below the guide roller; then below the upper sprocket to the gate, where it meets the negative, finally leaving the lower slot. It is highly important that both gelatin surfaces touch each other. Shut the camera and turn the handle, the speed of which depends on how the negative has been developed. If overexposed, take your time over it. Develop the positive in the same manner as you would the negative.

In order to bring out certain effects, black and white may fall flat, so you resort to tinting.

If you have some fire scenes the following formula will answer your purpose:

Distilled water	80 gallons
Film red R, No. 1 . . .	1 pound
Citric acid	13 ounces

Orange helps to make rooms illuminated by artificial light impressive, the formula for which I give below:

Distilled water	80 gallons
Film orange G, No. 6 . .	15 ounces
Citric acid	7½ ounces

Yellow, on the other hand, is excellent for suggesting mid-day sunshine in exteriors. Here goes:

Distilled water	80 gallons
Film yellow T, No. 5 . .	1 pound
Citric acid	7½ ounces

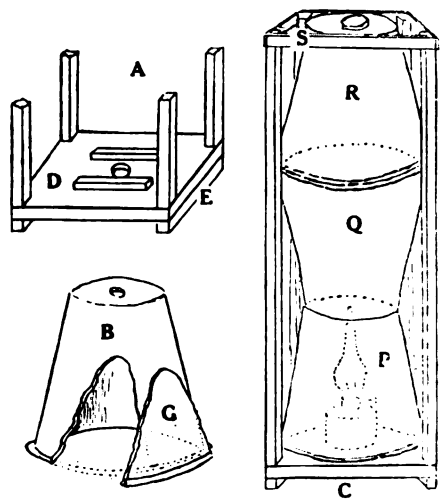
Night scenes look perfectly natural when tinted a dark blue. This is the formula:

Distilled water	80 gallons
Film blue G, No. 4 . .	10 ounces
Citric acid	10 ounces

You will now require one bath for each solution, and the work has to be done with great care, for the particular scene may be in the middle of a reel. You will, of course, already have it wound on a wooden frame, so to prevent it from getting tangled; rewind same on another frame until you reach the particular place. Dip the strip in the bath and leave it there for about five minutes, after which rinse same for about a minute in order to free it of excess dye.—ERNEST A. DENCH.

A RADIATOR FOR THE DARK-ROOM

A DESCRIPTION of a fitting for a cheap and servicable radiator for the workroom may be of service these hard times. The cost of the pattern I am about to describe is so small, and the making of it such a simple matter, that I can recommend it for rough use, but not for studio or reception-room, as its appearance is not "classy."



In brief, the arrangement consists of three plant pots and a paraffin lamp. Sketch *A* shows the construction of the base as used for a dark-room, when there must be no escaping light. It takes the form of a square board (*D*) one inch thick, and large enough to hold an inverted plant pot. A hole is bored through the centre

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for ventilation, two strips of wood are nailed, one on each side of the hole, as seen in sketch, and on these the lamp is placed. A strip (*E*) is then nailed on each side of the underneath part so as to form a sort of light trap.

B is the plant-pot forming the "furnace," and from one side of this a piece (*G*) must be broken to form a "door," in order to permit of easy manipulation of the lamp when alight. It is a crude form of door, certainly, but when the pot is inverted over the lamp (as *P*) the broken part is easily fitted. Vertical strips of wood at the corners of base, of a length equal to the height of three pots, and held together at the top with strips of tin or wood (*S*), complete the framework of the radiator.

Sketch *C* shows the arrangement in use, and almost speaks for itself. The lighted lamp, which must, of course, be small enough to be covered by a pot, is placed in position on the strips and over the ventilating hole; the pot with the "door" is then placed over it. Next, the pot (*Q*) is placed in position, the small hole at the base matching with that in the lower pot. The third pot (*R*) is then placed in an inverted position over the second pot, rim to rim, the top hole being covered with a tin lid or a piece of platter.

The heat from the lamp travels upward through the pots, which, when thoroughly warmed, give off a comfortable heat, and make a dark-room pleasant to work in. If there is not the slightest danger of the piled-up pots being knocked over—which is doubtful—the four uprights may be dispensed with.

If for workroom use, when escaping light will do no harm, the light-trap form of base may also be dispensed with, the lower pot, or furnace, being simply arranged in an inverted position on two bricks. It is, however, always advisable to make accessories of this type in such a way as to allow one to get at and regulate the lamp easily, as the pots get too hot to be handled with comfort.—Godfrey Wilson, in *British Journal of Photography.*

The Reproduction of Color-screen Transparencies

For the successful reproduction of color-screen transparencies it is essential to realize certain conditions with regard to illumination which are not always easily realized with the apparatus usually to be found in a process studio where the lighting arrangements are mostly adapted to copying by reflected light and when reflected light is used for the reproduction of autochromes, for example, it is rarely strong enough for continuous tone negatives and practically never strong enough for combined tone and color negatives.

I have tried various methods of illumination, such as direct lighting with one or two arc lamps, the light being diffused by various media, but the defect of unevenness is always present and difficult to overcome, unless the source of light is so far removed or the volume so cut down that it is nearly as poor in quality as reflected light, when the same faults are duplicated. Direct illumination with the aid of a condenser is more even, but the intense heat is almost sure to split the delicate film of an autochrome. Even when a water tank is interposed between the condenser and the color plate other difficulties arise, such as the heating of the water, which make the method one which is not to be recommended.

I have obtained the most successful results with a wooden box, without ends, lined first with asbestos and then with thin litho aluminum ungrained, which keeps its color well. At one end are formed four grooves one inch apart, to take sheets of ground glass, and it is well to make the grooves wide enough to take two thicknesses of glass. In front of these is a tank which can be conveniently made of metal framework with glass sides cemented in, allowing a measurement of one inch between the glass sides. This tank is filled either with clean water or with colored solutions, which are very convenient for correcting color transparencies which are faulty in coloring for any reason. For example, with floral subjects taken in flower shows, tints are always too yellow; to correct this defect the tank may be filled with a weak solution of a blue dye. The transparency is placed in front of this arrangement in a carrier, which may be of the revolving type, and should be movable, so that the distance can be varied between the tank and the color plate, two to three inches being the average distance.

For illumination I have used two projection arc lamps of fifteen ampères each, but have no doubt that other types of lamps could be equally well used. The position of the arc should be as near to the sides and ends of the box as is safe without causing over-heating. The light is reflected from the metallic lining from all four sides and at every possible angle backward and forward until the whole interior is a mass of brilliant light of excellent copying quality. The amount of diffusion or damping of the light is regulated by the ground glasses, two or three being used for dense transparencies and four or more for thin ones. The whole is erected in front of and in line with the camera, and the space between the lens and the transparency covered with an opaque cloth, when the color selection negatives can be made in the usual way, either with or without the half-tone screen.—A. E. Bierman, in *Process Year-Book.*

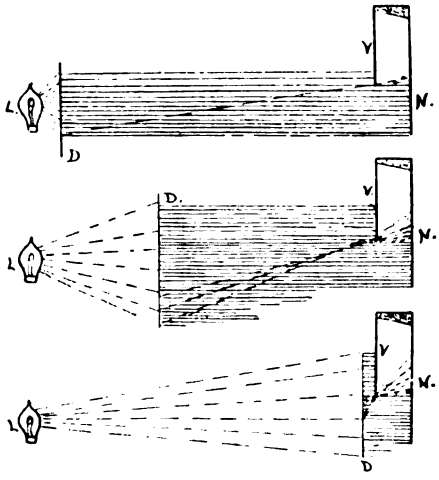
Vignetting on Developing Papers

Many seem to have some difficulty in getting satisfactory vignettes on bromide and gaslight papers. As a matter of fact, it is rather easier than daylight processes if gone about in the right way, as the conditions are more under control. Whether one uses a frame or a proper printing-box the principle is the same. A standard distance from the negative to the vignetting card is desirable, say, about an inch, and in most cases the source of light should be central with the hole, or the resulting vignette may be one-sided.

The controlling factor is the diffuser and its position relative to the light and the opening

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of the card. The nearer to the light the diffusing screen is, the sharper will the edge of the vignette be, and the nearer to the card the softer the gradation. The reason for this will be seen on reference to the diagram, in which *L* is the light, *D* the diffuser, *V* the vignetting card, and *N* the negative. If we regard the diffuser in each case as the source of printing light it is obvious that the direct rays which pass straight through the aperture to the negative are more powerful than the diagonal ones from the margins. Also the nearer *D* is to *V*, the further up on to *N* can some of these diagonal rays get.



In practice the method is to have a movable diffuser. Where a printing-frame is used on a shelf, a wooden frame holding tissue-paper or ground-glass, is stood in front of it. In a printing-box a removable glass shelf is fixed about an inch below the top on which to lay vignetting cards, and below that a series of pegs or wooden strips on to which can be slipped a sheet of ground-glass or a tissue-covered frame at various distances. It is preferable to be able to adjust this by a door at the front of the box to avoid shifting the negative and the vignetter about.

In some cases it may be found necessary to use cotton-wool for specially thin parts just as in daylight work. In extreme cases, where the background to be vignetted is rather dark, it may be necessary to have another sheet of tissue on the hole in the vignetting card itself, and in such cases I have found that still further softness of vignette can be got by matt-varnishing the negative. It is surprising what an improvement is sometimes obtained by that slight extra diffusion.—D. BERLIN, in *British Journal of Photography.*

EASTMAN PORTRAIT FILM

THERE are advantages to portrait films that are not possible when using plates. The chemical quality is equal to that of the best portrait plate, and the non-halation quality is excellent, as the film is so thin that there is no room for the light to spread. They are easy to handle, mail, or store, lie flat, are unbreakable, and may be retouched or etched on either or both sides.

ECONOMY OF DEVELOPERS

THE present condition of the chemical market should call for extreme economy in the use of developing solutions.

By economy we do not mean the skimping of the developing agent in making up a stock solution. This would be the wrong sort of economy, for the balance of the solution would be destroyed and the result would be disastrous. But there are methods of economy that will conserve the developer without affecting the resulting print.

Some of our readers will remember how the silver bath, of albumen days, was conserved. The sheet of paper, which had been floated on the silver bath, was carefully drawn over a glass rod across the end of the tray to drain all the surplus silver solution back into the tray. The paper was then placed between blotters, and the silver absorbed by the blotters was also recovered. It would have been a crime to have destroyed those blotters.

But where is the parallel—how does this apply to developer, you say? It doesn't, except as to the use of the glass rod and the comparative expense of the material in which economy should be practiced. An ounce of developing agent, such as Elon, is, today, worth more than twice as much as an ounce of silver.

And an economy greater than that of the old days can be practiced in the use of developers, today, with a little care and no unnecessary delay in the process of developing prints.

By comparative tests we have found that a given amount of developer in an 11 by 14 tray will properly develop a certain number of prints. In order to develop the same number of prints in a 14 by 17 tray, approximately one-third more solution is required to do the work.

The reason is quite plain when the rapidity with which coal-tar developing agents oxidize when exposed to the air, is considered. The 11 by 14 tray exposes a surface of 154 square inches of the developing solution to the air, while the 14 by 17 tray exposes 238 square inches, which is a 44 per cent. greater area of solution for the air to act upon.

To develop the greatest number of prints possible with a given amount of solution, use a deep tray, as nearly the size of the print as is consistent with convenience in handling your work. The saving in developer is worth more than the slight convenience gained by using large trays.

Another and equally great economy is suggested by the glass rod over which the silvered albumen paper, of former days, was drawn to drain the surplus silver solution back into the tray.

By carelessly tossing an 8 by 10 print from the developer into the rinse water, as much as one-half ounce of developer may be carried with the print. Try it for yourself. Lift an 8 by 10 print from the wash water with a quick movement and allow the water to drain into a small graduate. Then estimate how much solution is wasted in developing a gross of prints, if they

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are handled in the same manner in carrying them from the developer into the rinse water and fixing bath. There is also the additional injury to the fixing bath if the print is not thoroughly rinsed before it is fixed.

The economies suggested are not altogether a matter of saving a few dollars. It is imperative that the small quantities of developing agents available be made to go as far as possible, otherwise a very serious shortage may result. —*Trade News.*

Pyro for Bromide and Gaslight Papers

Pyrogallol as a developer bears such a reputation for staining everything it is brought in contact with that the mere fact of using such a developer for paper prints is much deprecated; but, strange as it may appear to many, pyrogallol can be used quite advantageously for either bromide or gaslight prints, without in any way interfering with the purity of the whites even when using ammonia as the alkali.

Four or five years ago, when making some large Bromoil transfers for photo-lithographic work, the requisite relief for such transfers was difficult to obtain with certainty when using the ordinary developers such as M.Q., etc. Remembering the fact of the noticeable relief on negatives developed with pyro-ammonia a trial was made on paper with that developer, the result being an enlargement that could not be distinguished from others developed with M.Q., until it was surface-dried, and then the beautiful relief was apparent.

Pyro-ammonia not always being on hand, pyro-soda was tried, with the same results as regards color of image, though the relief was not so high. But the transfers inked up very well indeed; in fact, far better than any prints developed with M.Q., amidol, etc.

All these Bromoils were fairly large—30 by 20 to 60 by 40. For many years I have used a 5 per cent. solution of soda sulphite, *plus* ½ per cent. metabisulphite of potash, for wetting enlargements prior to development, and this fact may to some extent explain the absence of any stain from the pyro developer.

The pyro developer used after the preliminary bath of acid sulphite of soda, gives quite as good enlargements as any phenol developer is capable of, and at the present time is very much cheaper. W. T. Wilkinson, in *British Journal of Photography.*

Platinum Substitutes Found

Substitutes for platinum, which will materially relieve the scarcity of that metal in this country because of the war, have been discovered by American chemists, F. A. Fahrenwald, of Cleveland, announced today in an address before the American Institute of Mining Engineers. He asserted that gold and silver alloys of palladium have been found to be excellent substitutes for platinum in its softer forms. It is expected, Mr. Fahrenwald said, that experiments with these alloys will revolutionize the work of the dental profession in platinum.

Home-made Dishes

Recently a dish was required in a hurry for the development of prints 40 by 25 inches, so a length of wood 1 by 1½ inches was procured, cut up into lengths, and a frame made with ends halved together and screwed up, this frame constituting the sides of dish, 1½ inches deep. The bottom, made from a sheet of three-ply wood, was nailed to frame, small nails being used and placed about half an inch apart all around so as to guard against any buckling of the three-ply. The outside of the dish, after smoothing up with glass-paper, was given a coating of Brunswick black, thinned with petrol, which dried quickly and without any objectionable stickiness. The inside of the dish was painted over with hot, melted, oilshop beeswax, and as this stuff sets too rapidly to leave a smooth surface, a generous coating was given, and then when set it was scraped level and smooth. The total cost was under two shillings, and the dish has given perfect satisfaction.

When such a dish can be made with a day or two in hand before being required for use, instead of the beeswax two or three coats of white, hard varnish will make a much better job and will be nicer looking.—W. T. Wilkinson, in *British Journal of Photography.*

PATENT NEWS

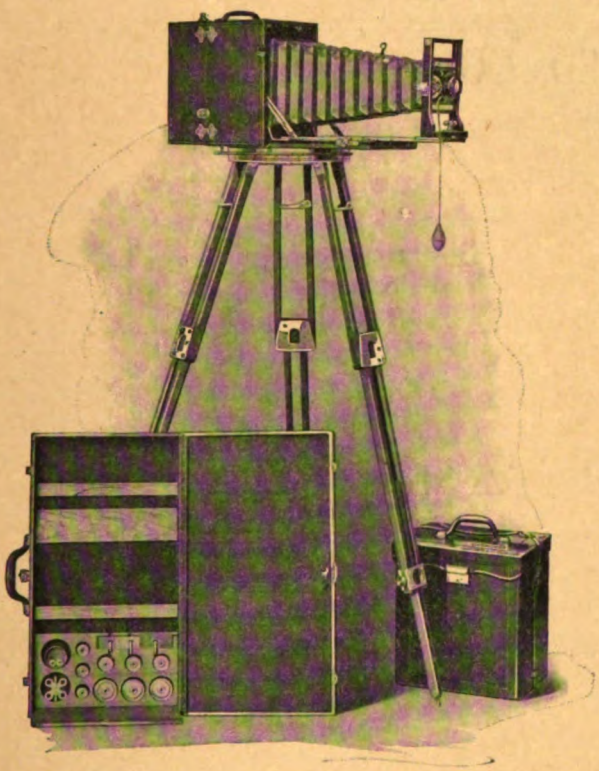
Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. M. & L. Mandel. 1170768.
Camera. H. L. Ide. 1170538.
Camera mask. 8. Feltenstein. 1170522.
M. P. film holder. Stoneman & Darby. 1170576.
Film cartridge. J. A. Robertson. 1170674.
M. P. machine. J. Proksa. 1170991.
M. P. Film. Blondel & Chopin. 1170506.
Lens tester. C. J. Troppmann. 1170579.
Color film. F. E. Ives. 1170540.
Daylight developing apparatus. H. C. Andrews. 1170952.
Coating machine. Cossitt & Castor. 1171321.
Camera. Turner & Schidakostch. 1171483.
M. P. Camera. C. A. Phillips. 1171877.
Exposure chart. A. D. Shiland. 1171548.
Plate holder. E. Stott. 1172072.
Photo. and developing apparatus. G. C. Beidler. 1171495–6.
Stereo camera. E. Pipon. 1171639.
Photoprint machine. C. C. Townes. 1172074.
M. P. Machine. G. C. Vaumur. 1171485.
Camera. E. V. Banks. 1173083.
M. P. in colors. T. A. Mills. 1172621.
M. P. projector. E. Schneider. 1172567.
Film mender. A. J. Bernard. 1173142.
Daylight envelope. A. Adair. 1172922.
M. P. machine. D. O. Teaman. 1172492.

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THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII MAY, 1916 NUMBER 5



EDWARD L. WILSON COMPANY, INC.
122 E. TWENTY-FIFTH ST. NEW YORK

THE PITTSBURGH SALON

By W. H. Porterfield

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Enlarging thin and weak amateur negatives

Thin negatives worthy of being enlarged because full of human interest have heretofore found their way to the scrapheap. No enlarging paper on the market was capable of correcting the technical deficiency of such negatives, until the advent of

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PITTSBURGH SALON, 1916
'SWEET SIXTEEN'
BY MRS. W. H. RAU
PHILADELPHIA, PA.

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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII MAY, 1916 NUMBER 5

THE PITTSBURGH SALON, 1916

By W. H. PORTERFIELD

REGARDLESS of the portentous prophecies which have persistently emanated from regions where former salons have found interment, and unmindful of the fate which has attended similar efforts in the past, the promoters of the Pittsburgh Salon have courageously essayed the organization of an annual photographic exhibition which possesses features that justify a belief in the permanency of the institution.

Perhaps conditions are more favorable today for the success of an enterprise of this nature than was enjoyed by the organizers of former salons, or perhaps the faith in its future is due to a plan not heretofore employed; one is free to accept either one or both of the above reasons or to substitute whatever other reason seems most plausible, but the facts as they exist permit no denial.

It was only to be expected that the salon should encounter the opposition which is commonly met with in any endeavor that dares to deviate from the prescribed course established by its predecessors, and had the Pittsburgh Society been less determined the present exhibition might have gone the way of other good intentions. Whatever may be the fate in America of the so-called pictorial movement in photography it must be admitted that the Pittsburgh Society has performed a most valuable service not only in continuing their exhibitions but in maintaining a high standard of excellence in the art at a time when many of the older organizations have degenerated into a condition of innocuous desuetude or perhaps have ceased to exist altogether.

Many are the causes and varied are the reasons offered in explanation of the untimely demise which has overtaken so many promising photographic societies, yet no diagnosis seems quite as comprehensive as the paradoxical deduction that they suffered for the

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want of an element the possession of which has made Pittsburghers famous, to wit, a little iron in the blood of the body photographic.

Nor would it be justice to pass unnoticed in this day of feverish business activity, when the pursuit of the almighty dollar takes precedence over all other forms of physical and mental exertion, that another element quite as necessary as iron is also found in Pittsburgh, and in order that pictorial photography might wield the maximum of influence uninterrupted the Pittsburgh men cheerfully give the time and gladly produce the gold necessary to defray the expenses of this exhibition and make it possible to continue the program which had its inception in the exhibitions held in the past.

It is therefore particularly fortunate for photography that the three conditions—place, support, and inclination—all so vital to a successful salon—are found, so to speak, under one roof, and possessing these essentials the Pittsburgh Society have it in their power to add still more glory to an already famous community in the perpetuation of an annual salon which shall make Pittsburgh and pictorial photography synonymous.

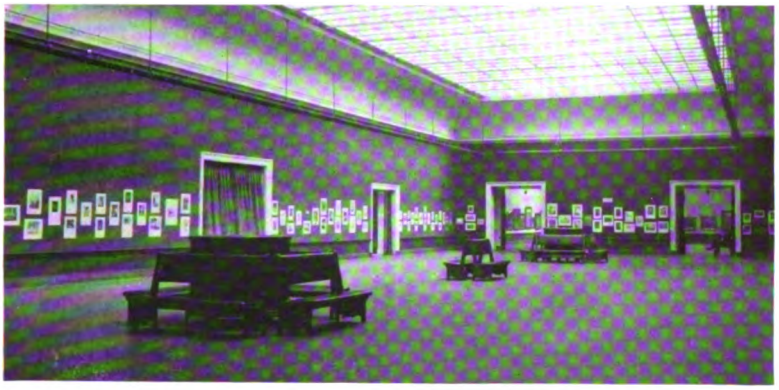
The former exhibitions held in Pittsburgh (1914–1915) under the auspices of the Photographic Section of the Academy of Science and Art are now matters of history, and not only were they the most important photographic incidents of their time but from these events much valuable information was secured which assisted materially in selecting the personnel which now constitutes the salon membership.

The rules which govern and control this operation have already been described and need not be mentioned here. That they served admirably the purpose for which they were formulated is proved conclusively to all who availed themselves of the pleasure of a visit to gallery F in the Carnegie Institute while the exhibition was in progress.

While the exhibition included pictures from most all quarters of the United States, there were spots which were without representation and to the critical observer who would compile statistics and delve in mathematical percentages, the exhibition is not without interest, for it is by such analysis that we arrive at an understanding of the comparative photographic activity in the various States and localities. Thus, New York, as might be expected, heads the list with 93 entries, while California is second with 67; next in order is Pennsylvania with 52; Illinois with 18; Massachusetts, 11; Maine, 8; Arizona, Iowa, Maryland, Wisconsin, and Ohio, 6 each; New Jersey, 5; Washington, 2; Michigan, 2; and Oregon 2. Total 290.

Aside from calling attention to the remarkably fine showing made by the Californians, no further comparisons will be made here. It is obvious, however, from the above figures that something is decidedly amiss, for it would seem that in a large part of our country pictorial photography is not taken seriously. This is not a conclusion based entirely on the showing made at the present salon, inasmuch as similar conditions have been noticed in former exhibitions. Why States like Florida, Georgia, Alabama, Louisiana, Missouri, Kansas, and progressive Minnesota and Texas should be consistently non-participating in the national exhibitions of pictorial photography deserves investigation, and it is hoped that immediate action will be started by the directors of the Pittsburgh Salon to encourage contributions from workers in these and other unrepresented States, to the end that the next salon may be truly national in the broadest sense. It is not for the reason that the material necessary for the production of pictures is only to be found in certain places and that outside these precincts nature possesses no beauties, no charms worthy of exploitation by the camera man. Rather is it easier to believe that the wonderful possibilities of the lens and plate are not fully appreciated and that only a demonstration—an introduction if you will—is necessary in order to awaken interest in the work in these sections, the inhabitants of which perhaps do not realize that photography is no longer regarded as "handmaid" to art, but a duly recognized means of "individual

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CORNER OF GALLERY F, CARNEGIE INSTITUTE
291 PRINTS IN THIS GALLERY

artistic expression" and as such has been received into and accredited places of honor in the foremost picture galleries.

The walls of the Pittsburgh salon hold many examples of work which preclude any remarks except those of a most complimentary nature, as but few of the other kind succeeded in getting past the selecting committee. So the average of quality is exceptionally high throughout the show. If the exhibition contains none of the "mountain peaks" of photography, neither is there to be found that sort of thing which is so frequently met with in the salons and which forces the question, if this, why that?

The work of the reviewer in this instance becomes a pleasure and it is with sincerest admiration that one turns to the prints of George Alexander, of Chicago, who shows five large gums with his usual strong touch, of which No. 4 in the catalogue, the "Roseate Spoon-bill," is not only the most popular but the best. "The Birch Tree" (a view of Niagara), and No. 2, "On the Mountain Top," a tree study, "The Sentinel," No. 5, and "Prospect Point," follow closely in merit.

Print No. 1, "Out of the Desert," C. B. Albree's only exhibit, is good in suggestion of the sandy waste.

The five prints by Elizabeth R. Allen, of Moorestown, form a remarkable collection of studies of "Camp Fire Girls." All have been greatly admired on account of the originality of subject as well as the distinct element of poetic feeling that pervades the entire collection. "Puckachipé," a beautiful profile of a young girl in appropriate attire, is perhaps the greatest favorite, though all received more than ordinary attention, because they deal with a timely subject, and aside from this they leave nothing to be desired in presentation.

Charles K. Archer, of Pittsburgh, again chooses local material for his subjects, and is best represented by three excellent river pictures, Nos. 15, 16, 17, in all of which he succeeds in depicting the character familiar to all who know that interesting part of Pittsburgh.

From Berkeley, Cal., we have the work of one who has heretofore not exhibited at Pittsburgh. In every one of Laura Adams Armer's prints the artist is unmistakably present, and it is difficult to attempt a choice. "The Cave Dwellers," "The Story Teller," "In Tahaiti," and "Islanders" vary greatly in subject matter but little in pictorial excellence.

William S. Bailey's "Christmas Eve" is a difficult subject well handled.

C. E. Beeson, of Pittsburgh, sends one print, "The Rose," a silhouetted head against a decorative window. Originality and good printing entitle it to more than average notice.

"The Venetian Well," by Charles I. Berg, is a beautiful foreign bit in his good style and technic.

The same may be said of Nos. 28 and 29, "Florence" and the "Temple of Neptune," by Harry George Bohn.

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Rupert Bridge, of North Adams, Mass., is strongest in No. 40, "Willows," though Nos. 37 and 38 are very creditable prints.

Of Alice Boughton's five prints, it may be said this worker probably reaches the highest point in No. 35, a fine portrait of Boardman Robinson. No. 33, "Yvette Guilbert" is excellent. "The Marsh," a gum, No. 31, detracts from rather than enhances the exhibit by reason of entire absence of anything like photographic quality.

The six prints by Gertrude LeRoy Brown possess good quality and are well composed and convey perfectly the message of the artist.

Katherine Bruchersеifer, as in former Pittsburg exhibitions, maintains her place as a pictorialist of high class. "Sonia," a window portrait; "The Metropolitan Tower at Night," and two outdoor draped-figure studies complete her fine collection.

Of the numerous subjects made abroad which help to make up the exhibition none excel in charm and pictorial quality those presented by Dr. A. D. Chaffee, of New York. Quaint pictures of houses and narrow streets done in a wonderful quality of gum place these prints among the best in the exhibition.

C. W. Christiansen, of Chicago, visited the San Francisco Exposition and shows three striking studies of mammoth buildings and lofty columns. "A Vision of Rome" and "In an Italian Garden," truly heroic and done in his usual strong manner, easily find a place with the best. Then turning to No. 61, a most exquisite study of water lilies, Christiansen shows an ability to handle the opposite and more humble subjects with the same masterful hand.

No. 66, by W. A. Dick, of Pittsburgh, is a poetic rendering of a sunlit valley full of delicate tones and shadows.

Edwin G. Dunning shows to advantage in No. 72, "The Conquering Sword," and No. 74, "Pierrot"—the former a quite original conception and the latter a sparkling bit of costuming equally interesting.

John Paul Edwards, of Sacramento, sends the only aëroplane picture of the year, and his No. 76, in which a machine is seen against a background of clouds, is well done. No. 80, the "Court Verrochio," is, however, his best and a very interesting piece of Italian architecture.

The ordinary adjectives fail to describe the effect of luminous wood interior which Rudolf Eickemeyer, Jr., shows in his big print, No. 81, "The Mystery of the Deep Woods." A very wonderful arrangement of trees printed in a medium perfectly suited to the subject makes this print one of the delights of the show.

Adelaide W. Ehrich, in a collection of six prints, covers as many subjects. "Above the Clouds in Switzerland," No. 83, is a landscape of rare beauty and exceedingly delicate, while No. 82, a landscape with figures, is strong and well arranged. No. 86, "A Portrait of Mrs. H.," merits attention for its ease and simplicity of posing.

One of the most striking prints in the salon is Donald C. Fitt's No. 88, "Hecuba." This dramatic piece, so masterly in pose and execution, must be seen to be appreciated. It stands apart quite in a class alone and is one of the grand things of the show.

John Wallace Gillies is best in his No. 92, "The Gull," which shows a great expanse of sky and clouds with a gull sailing serenely overhead.

Another of the prints that will live is James N. Giridlian's portrait group No. 96, a large dark-brown print showing two people of advanced age in a distinctly original pose. The naturalness and ease shown in the expression of both faces is a never-ending delight.

One may repeatedly visit Louis A. Goetz's collection and find his delicate figure studies by the sea increasing in interest.

Elias Goldensky, of Philadelphia, is well represented in his five large prints, and while these pictures are new the character of the maker is so well-known that detailed remarks regarding his contribution to the present salon is unnecessary.

A doorway in an old farmhouse forms the subject of the single print exhibited by Florence Baker Grey, of Brooklyn.

William P. Hall, of California, likes

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"ISLANDERS"
BY LAURA ADAMS ARMER, BERKELEY, CAL.

variety and sends six prints of good selection, all well printed.

In the work of Forman Hanna, of Arizona, we see the wonderful character of the southwestern desert: great stretches of sand and distant hills; threatening clouds suggest that the sun does not always shine even in the desert. His No. 113 is particularly effective.

No Pittsburgh photographic show would be complete without a picture of the Wabash bridge over the Monongahela. This year Thomas R. Hartley shows a delightful rendering of the subject, all in gray and quite different from the entries in former salons. "An Old Willow" and "Autumn Haze," by the same exhibitor, are bits of landscape about Pittsburgh.

"The Patrol," No. 123, by John A. Hickey, of San Francisco, is a delicate gray print of the seashore and in which a bird of the gull family is seen in the foreground.

Though a newcomer, George B. Hollister, of Corning, N. Y., creates a very favorable impression with his three prints, "The Clay Modeller," "The White Hat," and "A Wild Cherry Tree." The latter is a landscape with effective clouds.

W. A. Hudson's three gum prints in colors are very successful, because the tones are rich and chosen with taste. "The Old Altar," No. 130, and "A Corner in the Patio," No. 128, convey most admirably the ravages which time has wrought to those old California ruins.

The Panama Exposition at night forms the theme of Dr. E. O. Jellincks' six large prints, which are faultless in technic. All are carefully chosen with respect to exactness in composition and balance, and are clothed in a wealth of detail which make them exceedingly valuable as records of this great event.

Myers R. Jones, of Brooklyn, succeeds as a delineator of character studies with his "Rugmaker" and "The Smoker," Nos. 139 and 140, as does Carl Ashton Jordon in his print, No. 142, entitled, "Cal'late it's a Smart Mile."

Charles B. Keeler, of Cedar Rapids, Ia., approaches the style of Maxfield Parrish in No. 144, a beautiful big landscape with wonderful trees and breezy clouds. "Comrades" and "The Story Book" reflect the knowledge possessed by this worker in other forms of composition.

T. W. Kilmer's print, "Along the East River," is somewhat panoramic in scope and presents an unconventional view of the crowded East Side of New York. A "Portrait of A. V. Mood, Esq.," is excellent in taste and harmony. S. de Kosenka, of New York, is original and interesting as ever in his single entry entitled, "A Shadow Study."

No. 154, "A Sunlit Portal," by Dr.

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R. S. Lovejoy, of Portland, Me., is full of the beauty of light and a most interesting study well named.

The bigness of Niagara is convincingly shown in E. I. McPhail's No. 156, "The Power of Niagara," in which a small figure has been introduced in order to emphasize the height of the cataract.

Three prints in rich platinum by William E. MacNaughtan show "A Mennonite Maid," "Study of a Head," and "A Meadow Brook," all in excellent values and consistent in tone quality. The study of a head, No. 158, lately reproduced in the *Pittsburgh Index*, is one of the lights of the show and an exceptional piece of character portraiture.

One can see in Oscar Maurer's No. 160, "Expo Harbor," a marine in the style of the Dutch painter Mesdag; three other prints by this artist show scenes about the California exposition, though much of the effect of the prints is lost in unfortunate mounting.

Reuben Miller, Jr., of Pittsburgh, sends five prints. Particularly noticeable is No. 167, "A Portrait," medieval in expression, and two evening effects of sunset seen through leaves and across the shimmering waters of a lake.

No. 171, W. C. Meller's "Sunlit Doorway" and "Early Morn," are both effects in which delicacy of selection and handling are the dominant notes. In the former the eye is pleasantly led along a winding path to the doorway and a row of interesting columns, while in No. 172, a vista through an arch shows a sunlit wall in morning mists.

If F. E. Monteverde's "Tropical Sunset" is a little overprinted, it is still a most effective piece of work, and a sailboat, No. 175, is a good marine.

Among the original works displayed is H. Remick Neeson's "The Circular Stairs." The figure ascending is well placed and carries out a well arranged plan of composition.

"Playing the Koto," by Percy Neymann, of San Francisco, shows a Japanese musician in appropriate surroundings.

Imogen Cunningham Partridge sends only two prints and each is a leader in its style. No. 188, "The Bather," is a decidedly unique pose of a nude figure with reflections in the waters of a placid pool, and No. 189, "Designer and Design," is a conception in Oriental richness, in which the designer's portrait is cleverly combined with the design shown in the background.

James Laughlin Phillips' print, No. 191, "After a Storm in the Rockies," conveys excellently the effect of rain and mist in the highlands, while interest is stimulated by a group of men and horses seen making their way toward a pass in the mountains.

The "Court Verrochio" and "A Bit of the Far East," from the Panama Exposition, show admirable ability of selection on the part of Herbert H. Piper, of San Francisco.

James Popino, of New York, has a very charming print in his "Mother and Child," the face of the mother in profile silhouetted against a window and the child's face in illumination.

Jane Reece has a good portrait in "Albert Loose, Artist," and an equally good composition in "Harmonious Moods." No. 215, "Girl with Muff," is somewhat overprinted, while No. 218, "Old Pictures," in addition to the same fault, suffers from an unnatural pose.

Reeves and Wright, of Philadelphia, are best in No. 222, "A Portrait Study."

"Brothers," by William H. Rabe, of California, is easily the best of this artist's collection and deserves special notice for the superb quality in the print, which shows two little boys on a woodland path. The print is beautifully lighted and satisfying in composition. This is closely followed in pictorial value by a print of "The Plow Team" and a night effect entitled, "A Foggy Night."

Mrs. William H. Rau, of Philadelphia, at once steps into the front rank as a pictorial portraitist with her beautiful prints, Nos. 212 and 213, "Portrait of Miss L." and "Sweet Sixteen."

An entire article might be devoted to the work of Nunya Seldes, a pictorialist who has recently affiliated with the Photographic Section of the Pittsburgh Academy of Fine Arts. Her six prints, done in gum, reveal exceptional ability in posing, and every print in her collection possesses an individual charm.

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PITTSBURGH SALON, 1916
"THE CONQUEROR'S SWORD"
BY EDWIN G. DUNNING
NEW YORK CITY

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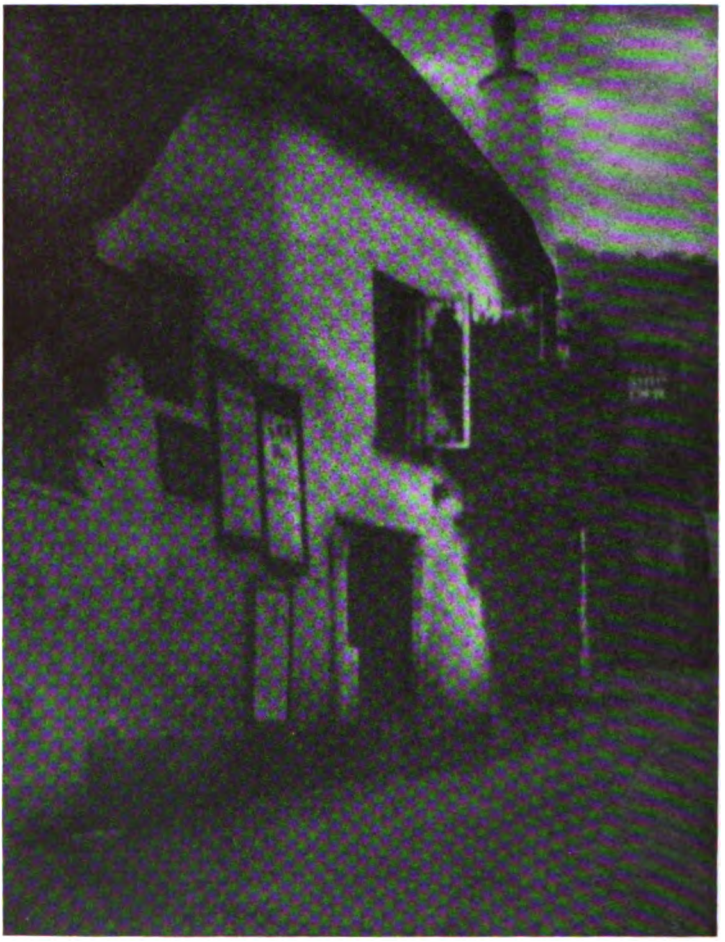
PITTSBURGH SALON, 1916
"TWILIGHT"
BY SANBORN YOUNG
NEW YORK CITY

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PITTSBURGH SALON, 1916
"THE SLOUGH"
BY N. S. WOOLDRIDGE
PITTSBURGH, PA

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PITTSBURGH SALON, 1916
"PORLOCK, DEVONSHIRE"
BY DR. A. D. CHAFFEE
NEW YORK CITY

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PITTSBURGH SALON, 1916
"THE TOP OF THE HILL"
BY CHARLES B. KEELER
CEDAR RAPIDS, IOWA

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PITTSBURGH SALON, 1916
"HECUBA"
BY DONALD CUMMINGS FITTS
NORTHAMPTON, MASS.

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PITTSBURGH SALON, 1916
"HARMONIOUS MOODS"
BY JANE REECE
DAYTON, OHIO

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PITTSBURGH SALON, 1916
"DESIGNER AND DESIGN"
BY IMOGEN CUNNINGHAM PARTRIDGE
SEATTLE, WASH.

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PITTSBURGH SALON, 1916
"SHADOW STUDY"
BY S. DE KOSENKO
NEW YORK CITY

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PITTSBURGH SALON, 1916
"PORTRAIT GROUP"
BY JAMES N. GIRIDLIAN
ELMHURST, N. Y.

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PITTSBURGH SALON, 1916
"SISTERS"
BY NUNYA SELDES
PITTSBURGH, PA.

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PITTSBURGH SALON, 1916
"PUCKACHIPÉ AND MEET' WE"
BY ELIZABETH R. ALLEN
MOORESTOWN, N. J.

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PITTSBURGH SALON, 1916
"THE OLD ALTAR, SAN JUAN CAPISTRANO MISSION"
BY W. A. HUDSON
LOS ANGELES, CAL.

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PITTSBURGH SALON, 1916
"INDUSTRY"
BY THOS. R. HARTLEY
PITTSBURGH, PA.

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PITTSBURGH SALON. 1916
"THE CIRCULAR STAIRS"
BY H. REMICK NEESON
BALTIMORE, MD.

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PORTRAIT
BY R. DÜHRKOOP

PORTRAIT
BY CARL FRIEB

PORTRAIT
BY A. GOTTHEIL

PORTRAIT
BY R. DÜHRKOOP

ILLUSTRATING SADAKICHI HARTMANN'S ARTICLE

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If there are any preferences it would be in favor of No. 238, "The Study of a Head," No. 241, "Sisters," and No. 242, "Meditation."

Another of the interesting figure studies at the exhibition is "Contemplation" by Hugh Thomas, of Buffalo.

"Fulton Ferry on a Foggy Morning," proves that L. M. A. Roy can make pictures of commonplace things, while his "Capitol, St. Paul," is a most decorative treatment of a piece of classic architecture seen beyond a row of tall, slender trees.

Angelo Romano, of New York, sends one of the few and easily the best print of still life, No. 223, "A Design in Ming."

Dr. D. J. Ruzicka finds his inspiration in and about New York, and whether personal fancy may prefer "New York, Old and New," "On the East River," "The Public Library," "Summer," or "The Park Bridge," there is no difference in the masterly treatment which characterizes each of the prints.

H. W. Schonewolf, of Buffalo, gives us a nude called "The Model." This composition differs from the majority of works of this nature in that the beautifully posed, softly outlined figure is entirely free from any element that would conflict with the taste of even the most censorious.

William Gordon Shields, of New York, has a very pleasing figure piece in "A Girl from Sicily," and a strong portrait study in "Sunshine and Shadow." "The Hour of Twilight" and "East River Barges" do not rank with Mr. Shields' former work.

Albert F. Synder shows two prints, "The Edge of the Woodland" and "Altitude Six Thousand Feet," both stronger than his work of last year.

The four prints by J. D. Strickler, of Pittsburgh, would be much improved if paper instead of canvas had been used for their support.

W. T. Starr, of Portland, Me., has a good character study in No. 243, "Down and Out."

The "Pennsylvania Station," No. 255, in the collection of Karl Struss, has attracted great attention. It shows the interior of this lofty edifice illuminated by a wonderful beam of sunlight. His "Venice," "Fifth Avenue," and "Connecticut Landscape," form one of the most interesting groups at the salon.

Garo, of Boston, as may be expected, is one of the strongest personalities of the show. Two portraits in his inimitable style are full of the character which has made his work famous in all exhibitions.

F. M. Sutter, of Detroit, might add greatly to the beauty of his "Fine Arts Building—Night" by using a more sympathetic printing medium.

A large print of "Castle Chillon" is Leonard L. Witting's single entry.

"Pompeii," by Everitt K. Taylor, is one of the popular prints at Pittsburgh.

Among the best of the interiors at the salon is No. 278, "Interior and Figures," by Mrs. Mary W. Wiltse, of Philadelphia. Four other prints of various subjects speak in favor of the versatility of the maker.

Norman S. Wooldridge, of Pittsburgh, has six prints, all of which possess good quality and pleasing arrangement, of which No. 283, a landscape in fine atmosphere effect, and No. 285, a portrait of a young lady in white, posed in an arbor, may be said to be the best.

Sanborn Young's "Bleecker Street," shows this famous thoroughfare with its motley crowd of street merchants and is a great print, as is every one shown by Young, particularly No. 292, a figure in filmy dress against a curtained window.

The four prints by Francis O. Libby, of Portland, Me., have much of promise in them, but the use of a most unbecoming green pigment destroys what might otherwise be creditable pictures.

Harry J. Doerr, of Los Angeles, is respresented by a consistent group of prints made up of architectural and landscape subjects, carefully chosen with respect to pictorial quality.

"California," "Summer," and "The Sunlit Pool," by Fred. R. Archer, of Los Angeles, are compositions worthy of a better presentation than the form in which they were shown in Pittsburgh.

"Morning Sunshine" is the better of two prints sent by A. P. Milne, of Portland, Ore.

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W. H. Porterfield exhibits six prints.

At a meeting held in the Carnegie Gallery, Wednesday, March 22, the directors of the Photographic Section of the Academy of Science and Art selected the pictures which are reproduced in connection with this article.

On that date also action was taken in accordance with the rule which provides for the election annually of new members, and the following named persons were selected from the list of exhibitors as eligible for membership in the salon, in addition to those chosen in 1915: Laura Adams Armer, of Berkeley, Cal.; Dr. A. D. Chaffee, New York; Edwin G. Dunning, New York; Adelaide W. Ehrich, New York; James N. Giridlian, Elmhurst, N. Y.; Louis A. Goetz, San Francisco, Cal.; W. A. Hudson, Los Angeles, Cal.; Charles B. Keeler, Cedar Rapids, Ia.; H. Remick Neeson, Baltimore, Md.; William H. Rabe, Oakland, Cal.; Mrs. William H. Rau, Philadelphia, Pa.; Nunya Seldes, Pittsburg, Pa.; Karl Struss, New York; Mrs. Mary W. Wiltse, Philadelphia, Pa.; Sanborn Young, New York.

ON THE COMPOSITION OF TWO-FIGURE PORTRAITS

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

IN this discussion I shall treat the various phases of two-figure composition, with the exception of the mother and child portrait, to which I have devoted a previous article.

There are, in my opinion, great chances for two-figure portraiture. It is a field that has been comparatively neglected. The German professionals make much more use of it than we do. I believe some enterprising studio could profit, not by making exactly a specialty of it, but by introducing two-figure portraiture whenever there is an opportunity (or rather, by forcing the opportunity), and by informing the public that it is ready to do that sort of thing.

Children always look well in pairs. But also grown-up folks lend themselves readily to that treatment. Brothers and sisters offer delightful opportunities (Figs. 5 and 10), and so do girl friends (Fig. 12), a mother and her grown-up daughter (Fig. 8), father and son, and elderly couples (Fig. 9). Lovers and bridegroom and bride will always look a trifle sentimental, but there is every reason to believe that they will be the most popular. They will never make the most artistic pictures.

The success of two-figure composition depends largely on the way the ovals of the faces are placed and the viewpoint from which the faces are seen. There is one rule that must be strictly obeyed: the heads should never be on exactly the same level. One should always be higher than the other, even if there is only an inch difference, as in Fig. 6. Slight differentiation is better than too much (as in Fig. 4). The heads perhaps look best if they are close together, as in most of the accompanying illustrations. Heads separated but still near to each other (Fig. 8) are more difficult to handle. The intervening space needs special attention. If the heads are far apart, as in Fig. 10, it becomes a matter of space composition. The two spots must balance each other perfectly, and there must be a connecting line or interest between them, or the portrait will give the impression of two disconnected figures.

The positions of the heads in a two-

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13. By HEINRICH KÜHN



14. By KARL PIETZNER

figure portrait allow of six different combinations: (1) When both heads are seen full face; (2) when both are in profile; (3) when both are three-quarter views; (4) when one is profile and the other three-quarter; (5) when one is a full-face view and the other three-quarter; and finally, (6) when one is profile and the other seen full face.

Two heads seen full face we have in Fig. 14. It is cleverly managed by tipping the little boy's head over to one side. It is the only way to get a graceful composition of this combination. Two full-face views without any inclination of one of the heads will always look awkward.

Two profiles we will find in Figs. 1, 9, and 13. Fig. 9 represents the most popular method, one head a little lower behind the other, both gazing straight ahead, as in medals. It looks well enough for these two old folks, but for most purposes will be found somewhat stiff and too severe. It is rather a decorative than a natural effect. Really very little can be done with two profiles. Fig. 1, by a lady home portraitist of Berlin, Germany, is exceedingly well manipulated. The peculiar position of the heads breaks the parallelism of lines. In the usual way of representation (Fig. 9) there is always the repetition of similar lines. Somehow one cannot get away from it. In Fig. 3 the problem has been solved, and this little picture should be carefully studied. It may suggest new ideas. Fig. 13, by Kühn, a German Secessionist, is one of those strange inventions that some photographers try to pass as portraits. It is a well-composed picture that will appeal to the painter, but most people like to be able to make out the faces, even if they should condescend to have themselves taken in profile. I do not believe that the two-figure portrait in profile will ever enjoy great popularity, except

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1. By HANNI SCHWARZ
2. ANON
3. By M. u. T. BERNOULLI
4. ANON

among old people who have celebrated at least their silver wedding.

Of the first three combinations, the third, of two three-quarter views, is by far the most pliable. In Fig. 6 we have a rather startling composition, startling in its simplicity and boldness of placing two heads together in almost exactly the same position. But you will notice the Λ-shaped inclination of the heads toward each other. That does the trick. Otherwise it would be intolerable. But even as it is, it does not look quite right. The hand holding the paper is not sufficient to balance the two line planes formed by the heads and collars. How much better is Fig. 8! There the two heads and the two hands holding the book form a circular composition, which helps any picture, but in particular one with two figures in it. There must be some reason why two figures are put together, and this should be vaguely suggested. In this instance it is the book balanced by the white tie of the younger woman. It helps to express the character of the two women. The old mother is in a contemplative mood befitting her age, while the daughter's face, watching the effect of what she points out in the book upon her mother, indicates the energy and animation of younger years. The slight inclination of the heads in the same direction also helps the general effect.

The combination of a profile and three-quarter view we can observe in Figs. 3, 7, and 11. It is probably the combination most frequently used, as it is the easiest one to handle. It is undoubtedly the most picturesque and natural one. It effects contrast by letting

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5. By P. von SCHOLLER
6. By TH. HILSDORF
7. By WOLFFRAM & CO.
8. By HELENA GOUDE

the distinct line of the profile play against the planes of the three-quarter view. In Fig. 3 it breaks up the oval of the three-quarter face, which is one of the most effective ways of applying it. But even if the profile does not overlap the other face, as in Figs. 7 and 10, much is gained by having the two heads of different shape. In all three portraits there is a point of interest—the sitters are occupied in looking at something. This, of course, is not absolutely necessary, but holds the figures together and makes the composition easier.

You will notice that the inclination of the heads toward each other is nearly always Λ-shaped in various directions and angles.

The combination of a full-face and three-quarter view is not so favorable. As it would be difficult to make the two faces look at each other—they generally would gaze out of the picture—it is only sentiment that could bring them together. This has been accomplished in Figs. 2 and 5. Both are brother and sister pictures, and depict affection. It is the best that can be obtained from this combination, and for that reason I believe this combination is principally suitable for children. Of course, other things can be done; but, as you must have realized by this time, my endeavor is always to bring out the most fundamental principle of every subject I discuss. Grown-up people ordinarily cannot be taken like the children in Figs. 2 and 5, and for other attitudes

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other views will be found more profitable. What I have said about two three-quarter view combinations would also apply largely to this one.

Figs. 4, 10, and 12 represent the best combination of a profile and full face. It is very much like the fifth. As a rule, the faces have to be brought close to each other (Fig. 12), as the point of interest must be specially strong. In Fig. 4 it is the book; in Fig. 10 it is indirectly present in the backward glance of the girl to see whether her little baby brother is following her. The combination is particularly appropriate for figures in walking or standing positions (Fig. 12). The three-quarter view would show a too decided interest. You will also observe that in this combination the profile cannot overlap the full-face view.

Everyone of these combinations has its own individuality and usefulness. It is for you to find out the full possibilities of each. My few suggestions may help you in your experiments and possibly save you a few plates.

SAVING PHOTOGRAPHIC WASTE—SILVER, GOLD, AND PLATINUM

By "CHEMIST"

THE subject of saving the waste material that contains the precious metals has been written and rewritten many times. It might be considered unnecessary to treat upon the matter because it is thought that the subject is well known and understood. Such, however, is not the case. There are many photographic establishments today in New York City, and doutbless in scores of other places, where the waste is not taken into account. Then there are establishments where the silver waste is saved and the old toning baths and platinum solutions are thrown away.

The editor of one of the photographic journals asked the writer a short time since whether it was not possible to precipitate the silver from waste solutions without the use of that very objectionable chemical, sulphide of potassium, or liver of sulphur, as it is sometimes called. The latter name was given by the alchemists who discovered it. Yes, it is possible to precipitate the whole of the silver by means that will not be objectionable in a photographic establishment. They will be here described.

In the first place, procure a kerosene oil barrel, or a wine barrel, remove one end, then wash the barrel out with hot water and drain, then bore a hole about one foot high from the bottom, and insert a wooden tap or faucet such as is used in a vinegar cask or a cider barrel. Mount the barrel upon a strong wood stand or trestle, and provide a wooden cover. The object of the cover in this case is not for the prevention of any injurious fumes escaping, but to prevent the dropping into the barrel of anything of use and value. Pour into the barrel any kind of silver solution, such as the fixing solution that has been used for negatives (this solution is always rich in silver); also the first making of the silver prints and the hypo solution that the prints have been fixed in. Place in the barrel about eight or ten pounds of clean scrap zinc, cut into strips about three inches wide and a foot or eighteen inches long. As soon as the barrel is about half full of these solutions pour into the mixture about a pint of common muriatic acid (spirits of salt). Stir the mixture with a long strip of wood, replace the lid and allow the mixture to stand. Continue to add the waste solutions until the barrel is full, or nearly so, when a few ounces more of acid may be added. If allowed to stand undisturbed for two or three days the

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whole of the silver will have been precipitated in the form of metallic silver and sulphide, due to the liberation of sulphur from the hypo upon the addition of the muriatic acid. The clear liquid may now be drawn from the barrel by the wooden faucet, and thrown away. Continue to save the waste in this manner until the precipitated material has nearly reached the faucet. Then make up two or three bags of calico, about eighteen inches long and eight inches wide. Arrange a piece of string in the top so that they can be suspended from a rod placed across the barrel. Scrape up the precipitate with a small enamelled saucepan, pour it into the bag until the bag is full. Proceed in like manner with the second bag. Allow them to drain thoroughly, say for the night, now tie the mouths of the bags up and all is ready to send to the refiner.

Small quantities of nitrate of silver solutions may be thrown into the barrel, but if the quantity of nitrate of silver solution is large, it will be advisable to precipitate the silver as chloride, in a large stoneware crock, by the addition of muriatic acid (common), and not by means of common salt, because if the salt is added in excess, a portion of the chloride of silver which is formed will be dissolved, forming a clear solution of the double chloride of sodium and silver. A solution of common salt is all right, providing you know the exact strength of the silver solution, and figure out the right quantity of common salt to use. If not, the chances are that much of the silver will be lost for the reason given. When emptied the barrel should be replenished with piece of zinc if found necessary. Always add the muriatic acid a few ounces at a time, because the liquid in the barrel is apt to effervesce and foam up, owing to the presence of gelatinous matter from some of the papers. If the barrel can be kept out of doors the sulphide of potassium can be used, but for indoor use the above method cannot be surpassed.

In saving gold waste from the old toning solutions the usual plan is to employ a five or six gallon stoneware crock with lid. Place in it a handful of protosulphate of iron. Pour into this the discarded solutions and stir up occasionally; but to get the full effect of this, the crock should be kept in a warm place, or the old solutions made hot occasionally when thrown in. If a few strips of zinc are placed in the crock in addition to the protosulphate of iron, and a few ounces of muriatic acid added occasionally, there will be no need to heat the liquid or to stand it in a warm place. Every trace of gold will become precipitated. The liquid will froth up sometimes upon the addition of the acid for the same reason given for the silver solution. When the crock is full, decant the clear liquid carefully, so that no precipitate is lost. Continue operation for about one year, then wash out the crock with its precipitate, pouring this into a filter paper that has been fitted into a large funnel. Be sure and place a small piece of absorbent cotton across the apex of the filter paper. This will form a strengthened support for preventing the filter paper from breaking. As soon as the precipitate is well drained it may be dried and sent to the refiner. Any other waste gold solution, such as the washings from bottles containing deposited gold upon their sides and spoiled gold solutions, should all be thrown into the crock.

All these little points should be attended to in a photographic establishment, for it costs no more labor to cast these old baths into the saving vessel than it does to throw them down the sink. All kinds of silver paper, whether toned or not, should be saved, and packed in a sack or in a sugar barrel when sent to the refiner.

Platinum waste of every description should be saved by the photographer; all the scraps of unused paper, as well as discarded prints and the print trimmings, old or disused developing solutions, and the first acid clearing liquids in particular. The value of platinum today is twenty-two dollars per ounce, gold being twenty dollars and eighty cents and silver about sixty-five cents. The refiners of platinum allow eighteen dollars per ounce for the metal obtained from photographers' waste, so it will be seen from this what is to be gained by the exercise of a little care.

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The best way to save the wastes of platinum in addition to the paper scrap is to employ a large stoneware crock, anything from five to ten gallons—those of an upright form are best for metal—fitted with a stoneware lid. Place in the crock three or four pounds of scrap zinc as previously described. When any number of platinum prints have been developed and cleared in the usual muriatic acid solution, pour all of the first clearing solution into the crock. If the number of prints has been considerable, throw in the second acid bath as well. Chemical action at once takes place, the acid attacking the zinc as well as the small quantity of chloride of the platinum salts. The zinc strips become blackened, by the deposit of metal platinum in a finely divided state. Eventually this falls to the bottom of the crock, together with iron and other bodies. By the next day all the platinum has been thrown down. Continue the adding of these acid solutions, as well as any discarded platinum toning baths used for toning paper prints, until the crock is full. Stir the contents well with a strip of wood and allow to subside. This usually occurs in a night. The clear liquid may now be bowled out with a small saucepan and thrown away, of course taking care not to disturb the precipitate, which looks like gray mud. All old or discarded developing solutions may be thrown in with the rest. It does not matter whether the developers and clearing solutions have been employed for black or sepia.

It may be found necessary occasionally to add a few ounces of muriatic acid to the contents of the crock, to aid precipitation when the acid baths have become almost neutral by the admixture of much of the developer, and through the addition of old developers. Stir the mixture up every night. This will insure the deposit of all the platinum.

If there is much work done in the production of platinum prints, it is advisable to employ two crocks; it will well pay the photographer to do this. After a month's or six weeks' saving the precipitate may be removed. To accomplish this employ a large glass funnel, about one gallon; place at the bottom a drawnout piece of absorbent cotton about the size of the palm of the hand; fold up a piece of stout blotting paper to act as a filter; place a fine strip of the same paper, folded, against the sides of the funnel, then fit in the folded blotter; bowl out the precipitate; fill up the funnel which should be placed in a six-inch hole in a piece of board across the top of one of the crocks; continue the filling of the funnel until it is full, or as soon as the filtering is complete. The whole mass may be stood aside to dry, or placed in a box that has several thicknesses of old blotting pads upon the bottom.

Continue to save the precipitates in this way until there is about twelve pounds of this precipitate, which in a large establishment will take about three months to accumulate. It may now, together with the paper cuttings and waste, be sent to the refiner, where it will be found that the returns made will form an agreeable surprise. If the number of prints have been about three hundred per day, of varying sizes, and the directions here given have been carried out correctly, especially if the prints made have been in black, and not many in sepia, it will be found that about fifty dollars will represent the sum returned for the platinum waste alone. If saved for a year in varying quantities, together with the gold and silver, where some five or six hands are required to turn out the printing, the returns for waste may be expected to realize from one hundred and twenty dollars to one hundred and fifty. This statement is based upon actual experience in the saving of waste upon the lines here described.

The value of precious metals that is allowed to waste will amount to thousands of dollars in many large cities, where it is deemed today in many establishments that the returns are not worth the trouble to save. Platinum paper contains a large percentage of the metal, and when it is considered that every ounce of platinum will return the photographer eighteen dollars, it will be seen that here is a source of income that is well worth giving attention to.

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TWO NEGLECTED PROCESSES OF REDUCTION AND INTENSIFICATION

By C. WELLBORNE PIPER

THERE are practically only two reducers in common use—Farmer's reducer and persulphate—and as the former in nearly all cases produces an extra amount of reduction in the shadows, which is not always desirable, while the latter is somewhat erratic in its behavior, reduction is generally looked upon as an unsatisfactory proceeding, to be avoided whenever possible. It is undoubtedly quite easy to spoil a negative by either of these two methods, and, however much experience we may have in their application, very few will care to incur the risk of applying them to a really valuable negative. Some years ago Dr. Eder introduced another method especially for the purpose of reducing the intensity of the high-lights without affecting the rest of the negative. This process was carried out by first bleaching the negative image to one of silver chloride or bromide, then re-developing the result, but stopping the re-development short just before the high-lights were developed right through to the glass. A fixing bath then removed the remaining undeveloped silver salt, leaving the high-lights thinner than they were before. The final result was, therefore, similar to that produced by persulphate when that compound works as it is supposed to do. But erratic as persulphate can be, it is reliability itself compared with the other process, which depends entirely upon stopping development at the particular right moment. If we are a little too late, the high-lights speedily attain their former density; while if a little too soon they will often fail to attain the density of some of the lower tones, so that an effect of reversal is obtained. It may be noted here that it is very doubtful if a reducer that has a greater proportionate effect upon the lights than upon the shadows of a negative is really of any value. In the great majority of cases one that acts proportionately throughout the whole range of gradation will serve just as well, and the few cases in which it will not serve must be due to under-exposure, which is essentially a defect that permits no remedy. There must always be a certain amount of risk attending the use of a reducer that acts preferentially in different parts of the film, whereas one that acts proportionately throughout cannot very well spoil the negative. If carried a little too far, the gradation is still preserved, and the only effect is general thinness, not the total destruction or reversal of gradation at one or other end of the scale. Fortunately, Eder's process is capable of modification that converts it into a reducing method of this type, and this improved method is one of the safest and most reliable processes possible.

REDUCTION BY RE-DEVELOPMENT

In Eder's original method as described everything depends on stopping development at the right moment before it has gone too far. In the modified process we depend solely on the use of a developer that is incapable of developing the image up to its former density. Nothing is left to personal judgment save the making up of the developer, and this is made up on quite simple principles. The following is the method I first adopted: Bleach the negative in the ordinary ferricyanide and bromide bleacher used for sulphide toning. It is necessary to use a bromide bleacher, but in these days, when bromide is so expensive, we can economize by keeping the bromide down to one-third the amount of ferricyanide. Five grains of bromide and fifteen of ferricyanide in each ounce of solution is quite enough, and more bromide is not only extravagant but unnecessary.

Wash the bleached plate and then re-develop with a solution containing 2 per cent. rodinal and 1 per cent. potassium bromide. The formula is:

Rodinal	100 min.
Potass. bromide	50 gr.
Water	10 oz.

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With this developer working at a temperature of 55° F. in half an hour the negative will be re-developed to a density equalling about 60 per cent. of its original density, the change being nearly proportional throughout. A fixing-bath removes the undeveloped silver salt, and a washing completes the process.

Rodinal was the re-developer first employed, but in point of fact any kind of developer can be used for the purpose. A glance at the old formula will show what kind of modification is required for our special purpose. Two per cent. rodinal is obviously a weak tank developer adapted to prolonged development, while the addition of 1 per cent. bromide converts it into a highly restrained slow tank developer. A suitable developer for reduction purposes will therefore be any very dilute and slow-acting tank-developing formula, containing up to 5 grains bromide per ounce.

If the original negative is not excessively dense we can use less bromide, and it is convenient to do so, as otherwise the time of development will be greatly prolonged. The formula given is adapted to negatives of excessive density, and as weaker ones will not require so much as 40 per cent. reduction, we must either reduce the bromide or prolong the time of development. A very convenient substitute for the rodinal is azol, which works just as well and can be used in the same strength.

The progress of development can, of course, be watched, and if the negative is examined from time to time it is easy to avoid either stopping too soon or too late. If we err in either direction the negative is by no means spoilt, neither detail nor gradation is lost, and the only result, in the one case, is a rather thin negative, and, in the other, one that is still slightly too dense.

THE MERCURY PHYSICAL INTENSIFIER

Some few years ago Messrs. Lumière, in an article on the development of plates that had been fixed before development, gave formulæ for both silver and mercury physical developers that were efficient for the purpose. It is obvious that a physical developer capable of building up a printable image on a fixed-out plate should be eminently useful as an intensifier on an ordinary negative; therefore it seemed to me worth while experimenting with the new mercury formula. The silver intensifier is, of course, well known, and so also are the objections to its use on gelatin plates. It is capable of most excellent results, but we cannot exactly rely upon it, owing to its habit of depositing silver in the wrong place, unless a preliminary clearing bath is used, as in Mr. J. B. B. Wellington's process. The mercury formula has no such objectionable features. On the contrary, it is a wonderfully clean intensifier, showing no tendency whatever to deposit mercury on the gelatin, or anythwere on the film other than the image. It is, however, slower in action than silver—too slow, perhaps, to suit commercial workers. For certain purposes, however, it is a most valuable intensifier, in spite of its slowness, for while it can build up an almost unlimited amount of density, it will do so without disturbing definition or clogging up fine, transparent lines. This is, of course, the peculiar feature of physical intensifiers that gives them a special value; and while this value is discounted in the case of the silver intensifier by the trouble it gives and the dirt it deposits, by using the mercury formulæ we can take full advantage of it.

The original formula is as follows:

A		
Water	1000 c.c.	10 oz.
Soda sulphite (anhydrous)	180 gm.	15 dr.
Mercury bromide . . .	9 gm.	40 gr.

B		
Water	1000 c.c.	10 oz.
Soda sulphite (anhydrous)	20 gm.	90 gr.
Metol	20 gm.	90 gr.

For use add one part of B to five parts of A.

The mixed solution is simply applied to the plate and allowed to act until sufficient effect is produced. An hour's action is sufficient in most cases, but the plate can safely be left in the solution all night if a very strong effect is desired.

It will be noticed that the formula contains two ingredients that now are

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rather difficult to get, if not unobtainable. The intensifier is, however, more suited to the work of the scientific investigator than to that of the ordinary photographer, and as there are probably few laboratories that do not contain both mercury bromide and metol in some small quantities, this objection is not very serious. I have made various attempts to substitute pyro for the metol, but without getting any good results, but possibly some developer other than metol can be made to serve. The bromide compound of mercury seems to be, and probably is, essential; mercuric chloride cannot apparently be substituted for it.

Two special branches of work for which this intensifier should be eminently useful are photo-micrography and spectrum photography, in both of which the intensification of fine detail without damage to definition or structure is sometimes of great importance. The general effect of this intensifier on gradation seems to be peculiar, in that it tends to intensify low tones to a greater extent than the deeper tones. In one test the increase in density varied from 8 and 5 times in the under-exposure curve, to 3 times and twice in the lower and upper parts of the straight line. It thus seems to tend to bring up fine shadow details without over-intensifying the lights, which effect at times is a very valuable one. The test referred to is, however, an isolated one, and it does not follow that the same peculiar effect will be produced in all cases.—*British Journal of Photography.*

COMPOSITE GROUPS

IF you have never made up a composite group, try what you can do, say, with the local fire department or the town council the next time you feel that business is getting slack. The result will be an agreeable surprise to you.

The best way to describe the getting up of composite groups is to take an actual case and state how the photographer carried out the work connected with a successful series of these pictures.

About seven years ago a photographer bought a business in a middle-class town of about 30,000 inhabitants. The business had been in the hands of an old man who had allowed the business to dwindle until profits vanished altogether.

This man realized that it was useless to sit in the studio waiting for customers to come in, so he went out to look for business. The idea of the composite group occurred to him and, without delay, he put it into practice.

The local fire department was the object of his first efforts. He called on the captain and explained that he would like to take a group of the members of the department. The captain took the request as a compliment, but pointed out the difficulty in getting all the members together for such a purpose. The photographer replied that what he wanted was to make up a composite group. This he proposed to do by photographing each member separately at his studio, and afterward making up the composite picture from the individual photographs. The captain agreed to ask each member to call at the studio some time during business hours within a week. There were twenty-two members, and before the end of the week everyone had given a sitting. Cabinet heads of a uniform size were taken of all the ordinary members, and a $6\frac{1}{2} \times 8\frac{1}{2}$ plate was taken of the captain. After this a neatly mounted cabinet portrait was sent to each sitter with a polite note stating that the photographer had pleasure in presenting him with a copy of his portrait taken for the composite group. The sitter was asked to say whether the portrait was satisfactory, as it was particularly desired that each member should approve of his own photograph before the group was made up.

When he was quite certain that all

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were satisfied, the photographer proceeded to finish his picture. He made prints on Artura and trimmed them to ovals. His next step was to get a heavy gray card, about 28 inches by 36 inches on which he outlined the space for each print. Then he mounted the prints, beginning at the top of the design and working downward, in such a way that each print partly overlapped the ones immediately above it. When all the prints were mounted they completely covered a pear-shaped space in the middle of the card. It should be mentioned that before the prints were mounted their edges were rubbed down at the back with pumice powder, so that no ridges were visible where the prints overlapped.

A card-writer was now called in to sketch a design around the group. He was told to keep the design simple, and to err on the side of severity rather than on the side of excessive decoration. After putting in the design the card-writer filled in the title and the date. When this was done the completed picture was copied on an 11 x 14 plate, from which mounted or framed prints were supplied.

On looking over the figures for the whole transaction the photographer found that, out of the twenty-two members, fifteen had ordered cabinets as a result of sending each sitter one of his own portraits and that eighteen mounted and six framed copies of the group had been sold.

This was considered satisfactory, and within a very short time sittings were arranged for the town council, the police, two friendly societies, and four athletic clubs. In about twelve months no less than eighteen of these groups were turned out, some of them containing as many as 160 members. Sixty per cent. ordered individual photographs, and 90 per cent. bought copies of the pictures.

This is a precise account of the method adopted by one professional; but the making up of composite groups need not be done according to any stereotyped plan; it may be varied to suit the requirements of the subject and the tastes of the photographer.—*Photographic Digest.*

Stained Finger-nails.—Very effective collodion finger-tips may be had with little trouble by dipping the fingers into a wide-mouthed bottle of plain collodion which will set quickly and perform the service of rubber gloves. This treatment is an admirable preventive of poisoning from chemicals, and is one that many photographers employ before beginning the day's development or toning. This thin coating of collodion, while it protects the pores of the skin and covers any abrasions that may be present, does not in the least interfere with the nicety of touch requisite in any photographic operation.

ONE great mistake some make is that they will, by hard work and various schemes, obtain a good business and here stop, thinking the business once gained will stay with them, and further efforts are unnecessary. But ere long he finds it slipping away by not using constant means to hold the once-gained business. It is not only necessary to work to build up a business, but, when once gained, work just as hard to hold it.

YOUR character grows as your chain of thoughts grow and expand.

BE willing to help others but put your trust in the hands of your Maker and yourself.

NO honest purpose is ever wasted and no honest desire ever remains unanswered.

REMEMBER every day counts in the making or marring of a whole.

DUMB brutes cry out when they are worsted but men should take their pain and disappointments in silence.

THE successful mountain climber is often caught in a blinding storm when he is near his goal. Remember he struggles on, with no thought and desire to retreat.

YOUR work may seem hard today but if you do your level best it is bound to come easier tomorrow.

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LEAVES FROM MY NOTE BOOK

By an Old Hand

DRESSING THE SHOW-ROOM

EVERY professional has a show-room. You may call it the reception-room if you like, it does not make any difference, it still remains the show-room, by means of which you try to sell portraits. It's just like the show counter of a dry goods store, where the silks, satins, and cottons are displayed and from which your customer—or, if you prefer the term, your client—chooses that particular style of portrait that pleases him and for which you get the money.

It would be interesting to know how many times the show-room is redressed in the year; that is, how many times the pictures in it are changed. I have been once a month during the last year into the reception room of a local brother, and at every visit the same old prints greet me on the walls except for a few extra fly-dirts.

I went last year to an amateur exhibition and was so struck with the whole thing that it has completely revolutionized my show-room. The whole place was draped in white; there were no frames and but few pictures; yet the total effect was restful and more striking than any that I had hitherto seen. That got me; I determined to adopt it at once, and possibly a description of the same may set some other fool thinking.

The walls of my reception room were papered with a soft, indefinite-patterned paper of a somewhat dark grayish-brown, and, as I did not want to repaper it entirely, a bolt of good quality white cheesecloth was obtained. This was cut into sufficient lengths to reach twice from wainscoting to ceiling. The lengths were then folded in half, tacked to the wall close up to the ceiling, and then strained straight and close to the wainscot and again nailed. The whole room was dealt with in this fashion, but a narrow one-inch space was left between the lengths of cheesecloth so as to form a series of panels.

Each panel was treated differently, but there was one common feature. No frames of any kind were used. For one panel nothing but straight-edged 8 x 10 prints on large white mounts was used. The highest print was just eight feet from the floor, the lowest just four feet. The central print was a rather dark, heavy print and the others round it were all lighter.

Sheets of glass of the exact size of the mounts were obtained; also some little steel hooks shaped like the letter L, the longer arm being one inch and the shorter arm half an inch in length. Two of these were driven into the wall below the bottom edge of the mount, the glass slid into position, and then another hook driven midway at the top. These held the glasses quite firmly and yet one could easily slip a print out for change or examination.

Another panel was devoted to rather small sepia prints, mostly cabinet size, keeping the top line of the prints just seven feet from the floor line and the bottom line only four feet six. All these were without borders. Above was hung a 20 x 24 sepia enlargement of an interior.

Another panel was devoted entirely to children, the central picture being an 8 x 10 enlargement and the others all with white backgrounds.

Each panel in the room was treated differently, and as far as possible devoted to one style of print. Two or three good enlargements were hung somewhat high, while over the fireplace, for I am lucky enough to have an open hearth in the room, was hung a six-foot enlargement of Landseer's famous picture "Shoeing the Bay Mare," of which I happen to have a very good copy.

The first panel I started on took me a whole day to get just right and I had the pictures up and down at least half a dozen times, until on altering them once they were all laid on the floor, when it instantly struck me that that was the proper place to arrange them in, and then transfer them to the wall. With succeeding panels this plan was adopted and it was astonishing how quick one got on.

When completed the effect was most striking and many a favorable comment was made by visitors, and even those of my brother professionals, who occasionally drop in for a glass, a chat and a smoke in the evening, said that they thought it looked fine. One even went so far as to say that he was going to take the idea and beat me to it. A week later he called me up by phone to come and see his room.

His room is not quite so lofty as mine, but is longer and narrower and the walls were painted a delicate green. He had just bought a roll of cheesecloth and stretched it as a panel all round the room, just tacked it up for its width and had hung on this white belt a few large prints. The effect was distinctly good and striking, and in fact it had more the effect of an exhibition than a reception room.

There are one or two points which have struck me in doing this work and I may state that the arrangement of the room is not, and will not, be allowed to remain the same more than two months together.

My first arrangement was striking, and excellent from the commercial point of view of a specimen room; but the differentiation into distinctive panels was a little trying after some

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time: One felt there was not enough continuity. So, the second time, the dark lines between the panels were abolished, the edges joined together, and one wall was hung with all black prints, the shortest wall with sepias, and the other long wall with nothing but a few good enlargements, and here and there a few tiny medallion portraits in circular form.

The possible variations seem endless, and I am scheming out a design to make the room like an old paneled room, with ceiling as well as walls paneled, with a high china rail, and place nothing but one or two pictures in each panel with some distinctive china above. So far as I can see the expense is not going to be much, as the whole of the work is done by myself and one assistant in odd times, and he is as keen about it as I am.

Let me add that I do a little advertising in the local paper and am pretty good friends with the local editor, who is a camera fiend of the worst type. I was fortunate enough to obtain quite a good write up, and as I also sent out some nicely printed invitations, quite a few people have called in to see the room and some business has resulted.

One of these days I intend to try the effect of hanging the room in black, with just three or four all-white prints, but I am a little afraid to start it.



Warm Tones by Redevelopment

The following process is recommended by *Kodak*, Ltd. (England) for obtaining from sepia to brown-black tones. Prints should be developed, fixed, and washed in the usual way and then bleached in any ferricyanide bleacher and washed till the yellow stain is removed and redeveloped with:

Normal developer (without bromide)	1 oz.
Water	15 oz.

This is a weak developer and should not be used for too many prints nor for more than one batch. The image appears slowly of a red color. For a rich, cool sepia the redevelopment should be allowed to proceed till the last trace of red has disappeared from the shadows and the print has a faint purplish tinge. The extent of the redevelopment determines the tone, the longer the action the colder the tone. When large batches of prints are dealt with it is as well to use an acid stop bath:

Glacial acetic acid	½ oz.
Water	40 oz.

After this the prints are washed for a few minutes and then transferred to the sulphide bath, where the toning is completed. A final wash completes the process. It is essential that the bleaching and redevelopment be done by white artificial light, not daylight, and to obtain perfect uniformity in a batch of prints from one negative it is necessary that they be evenly developed and redeveloped to the same extent.—*B. J.*, 1916, p. 173.

This process is recommended for Kodura paper, a slow bromide, but it is apparently applicable to other papers and gives some fine colors.

X-ray Plates

Drs. Hans Arnold and Levy-Dorn have been granted a patent for making an emulsion for *x*-ray plates by incorporating with the emulsion hydrosols of thorium hydrate or tungstic acid. The following is the proposed method for making tungstic acid in a colloidal state: a solution of sodium tungstate that has been very slightly acidified and the concentration selected so that there is 0.4 to 0.5 g. of WO_3 per liter is carefully dialyzed. To this solution is then added 140 grams of gelatin, 72 grams of potassium bromide and 7 grams of potassium iodide. To this when hot should be added 100 grams of silver nitrate dissolved in 1000 c.c. of water, stirring all the while. Other operations are as usual. If a colloidal thorium oxide solution is required, it can be prepared by treating thorium hydrate with thorium nitrate, and it is advisable to dissolve the silver nitrate in the colloidal thorium nitrate solution.—*E. P.*, 2243, 1915.

[As it is now generally accepted that the *x*-rays are nothing more than light of very short wavelength, it naturally follows that they must obey the Grotthuss-Draper law, *i. e.*, only those rays which are absorbed can produce chemical action, consequently any substance that will absorb the rays or, to put it in other words, anything that will stop the passage of the rays through an emulsion must necessarily produce greater action. It is a proven fact that the *x*-rays will act through several layers of sensitive emulsion without apparently losing their energy. This means waste, and were it possible to utilize the whole of the rays in a single film of emulsion it would mean a very substantial reduction of exposure. Many experiments have been carried out to this end; personally I spent six months on this point, and, although not recorded, it is well known that almost every platemaker has worked on the same, and there actually was a

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plate on the market in which a salt that was opaque to the rays was incorporated. Considerable advances have been made in the manufacture of *x*-ray plates, greater advances in the apparatus for their generation, it remains now for the emulsion maker to make still further advances.]

Tank Development

At a recent meeting of the Croydon Camera Club (England), Mr. W. G. Cullen stated that the following method of using pyro for tank development on a large scale had been found very satisfactory:

Sodium sulphite cryst.	10 oz.
Potassium metabisulphite	1¼ oz.
Pyro	1 oz.
Sodium carbonate cryst.	3¾ oz.
Water	140 oz.

The sulphite should be dissolved in about 60 ounces of the water, the metabisulphite added, the solution boiled for a short time, and then the other ingredients added. This will take about twenty minutes to develop, and if dry pyro be added in the ratio of about 1 grain per ounce the developer could be kept in good condition for at least six weeks. About three or four dozen plates, 4¾ x 6½ inches, could be developed per day before the solution became exhausted. Apparently the sodium metabisulphite cannot be substituted for the potassium salt.—*B. J.*, 1916, p. 177.

Regeneration of Hydroquinone Developer

Mr. J. L. Lizuis suggests the feasibility of regenerating used hydroquinone developers by generating sulphur dioxide, SO_2, from spent hypo baths by the action of dilute sulphuric acid and passing it through the developer till colorless and then passing steam through the solution when the hydroquinone will be carried over by the steam and can be condensed in the ordinary way. Stress was laid on the fact that, as a rule, far more developing agent was actually used than was theoretically required, and that 1 grain of hydroquinone will develop 13.8 square inches of plate surface. In the course of the paper the average quantity of silver in the above area was calculated, and then the approximate quantity of metabolic silver in negatives, and it was found that approximately five-sixths of the silver went into the hypo bath, and that therefore it would require about 5525 square inches of plates to give half a dollar's worth of pure silver.—*Phot. Journ.*, 1916, page 110.

[The process is of no practical value to amateurs or professional photographers. It might appeal to moving-picture producers. The calculations as to the quantity of silver applies only to the particular plate, not named; Haddon and Grundy, in 1893, read a paper before a London society, and, although this was never published, I possess a printed copy of the same, and they state that ordinary plates contained a mean of 1.027 and fast plates a mean of 1.214 grains to the above area. The quantity of silver in negatives seems about right. Eder states that from 16 to 21 per cent. of the silver forms the image and the remainder is dissolved by the hypo bath. Assuming that the quantity of silver is 1.2 grains to above area a dozen 5 x 7 plates will contain about 36 grains of silver of which about 30 grains will be recoverable from the fixing bath, so that about fourteen dozen plates will yield an ounce of silver, worth now fifty-eight cents.]

Gum Printing

In order to obtain pure white in the gum bichromate process it is recommended to add albumen to the sensitizer:

Gum arabic	8 gm.
Pigment	6 gm.
Whipped albumen	2 c.c.
Glycerin	1 c.c.
Potassium bichromate solution (16 per cent.)	15 c.c.
Copper sulphate	3 gm.

The bichromate solution should be neutralized with ammonia.—*Phot. Korr.*, 1916, p. 78.

[The use of albumen is not new, being suggested in 1903.]

War Prices, etc.

The price of plates has again risen in England. The two standard sizes, the quarter and half plates, 3¼ x 4¼ and 6½ x 4¾ inches, have risen now from 12 pence (= 25 cents) to 22 pence and the half plate has risen from 27 to 48 pence per dozen.

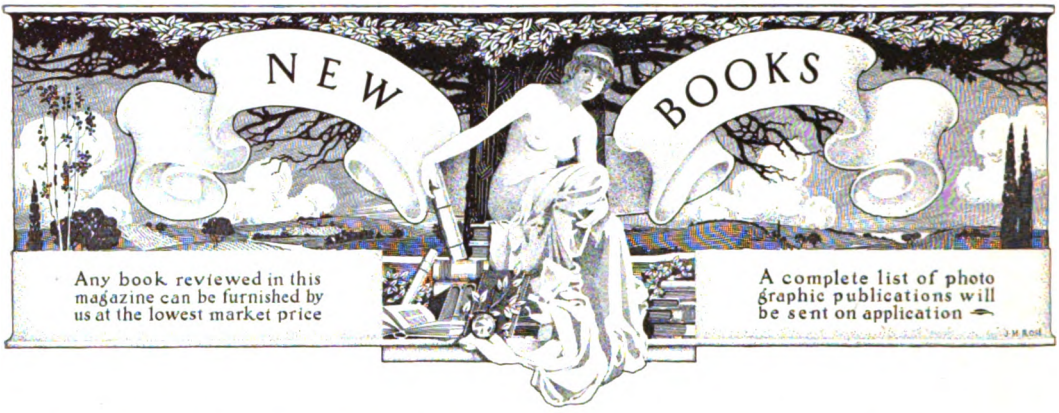
Prices have also risen in Germany and it is now also "verboten" to export any photographic paper of any kind from that country.

A New Process

Christensen has obtained a German patent for a new process for making photographs. The inventor has observed that a silver bromide collodion film, if made with amyl acetate or a mixture of the same with isobutyl alcohol, is more porous in those parts where the silver image is deposited and that solutions will therefore penetrate that would not otherwise do so. For instance, if 12 grams of Albert's Helio emulsion be dissolved in 40 grams of amyl acetate and 60 grams of isobutyl alcohol be added and the mixture poured over a gelatin-coated plate, it will when the solvents have evaporated prevent the penetration of an aqueous solution to the gelatin, but if the film be exposed and developed and immersed in a dye solution the latter will penetrate wherever there is a deposit of silver. If the gelatin film be stained with fast green (echtgruen) and after exposure the plate is brought into contact with a gelatin film saturated with a developer, not with a carbonate, but containing a caustic alkali, the dye will leave the primary film and wander into the secondary or contact film. It is claimed that the process is suitable for etching metals and that the addition of 0.1 gram of benzoic acid to the emulsion (presumably to the above quantity) is advisable. —*D. R. P.*, 289629, 1913.

[This patent was published in January, 1916. Exactly what is meant by echtgruen is an open question. It might be dinitroresorcin or malachite green or others.]

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COLOR AND ITS APPLICATIONS, BY M. LUCKIESH. PUBLISHED BY VAN NOSTRAND CO., PRICE, $3.00

THE aim of this book, according to the author's preface, is to present a condensed treatment of the science of color. The fundamentals of light are discussed in a happy manner, but it would clear the ground somewhat if some space had been devoted to an explanation of "energy," and to actual examples of the Planck and Wien-Paschen laws, for which merely formulas are given, assuming, of course, that the work is intended for those who may not be physicists.

The production of color, color mixture, terminology, analysis, vision, effect of environment, photometry, are some of the subjects dealt with generally in a happy manner, though here again the author assumes a knowledge on the part of his readers which is not always justifiable.

In Chapter X we are presented with a sketch of color photography, and it is unfortunate that the author is not a little more precise in his statements. For instance, he states that F. E. Ives was a pioneer in the tricolor process and that "Cros independently developed a similar method." As Cros' work was dated 1869 and Ives' 1889, it is merely a question as to the strict definition of the word pioneer. Ducos du Hauron, who was contemporaneous with Cros, is merely credited with the invention of the line screen plate, whereas he actually outlined every present-day process of color photography. Clerk Maxwell, who antedated both by three years, is not mentioned at all; neither is Wuensch's work, nor the bleach-out process.

Color in lighting, effects for the stage, color-matching, are also some of the other subjects dealt with. A good index of authors and subjects is included, besides numerous line illustrations and two colored diagrams of real excellence. The book is well worth careful perusal and not the least valuable part is the list of references at the end of every chapter, which if followed by the reader means real study.—E. J. W.

TECHNOLOGY OF CELLULOSE ESTERS. VOL. VIII. BY E. C. WORDEN, F.C.S. PUBLISHED BY VAN NOSTRAND CO. PRICE, $5.00

IT may seem somewhat anomalous to publish the eighth volume of a text-book first, but it is justifiable when the subject dealt with is of considerable present-day interest and the author has all data ready.

This work as a whole is intended, to quote the author, "to present the entire subject of the combinations of normal and modified cellulose with acid radicals in such completeness, accuracy, and detail that inability to find in the Collective Indices the information desired will be trustworthy evidence that the matter sought was either ephemeral, irrelevant, inaccurate, valueless, or non-existent."

A somewhat ambitious aim, it will have to be admitted; but if the other volumes are up to the level of this we shall have one of the most exhaustive and reliable treatises in the English language, and one that will be almost unique.

As a matter of fact, one would suppose that the author was of German extraction, so thorough is his treatment of the subject, but his name is of good English origin.

This particular volume treats of the carbohydrate carboxylates, which may be said to include the cellulose acetates and formates and other esters which are non-inflammable. The various topics dealt with are: raw materials, manufacture of cellulose esters, solvents, non-solvents, and plastic inducing bodies, commercial applications, and analysis. It is impossible to deal in detail with the same, but so far as one can judge from a very careful study of the book it fills the author's aim.

Not the least valuable section of the work is the Appendix with its wealth of patent, author, and topical citations. These run into the respectable number of about seventeen thousand. The work will become a classic.—E. J. W.

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Pittsburgh Salon of National Photographic Art, 1916

The Third Annual Exhibition of the Pittsburgh Salon of Photographic Art, under the auspices of the Photographic Section was held in Gallery F, Carnegie Institute, from March 1 to 31 inclusive. The exhibition was open daily and the large attendance proved the most successful on record.

The aim of the Pittsburgh Salon is to exhibit only that class of work in pictorial photography in which there is distinct evidence of personal artistic feeling and execution.

In presenting this exhibition to the people the members of the Photographic Section Academy of Science and Art must feel a well-merited sense of satisfaction, and to them is due the fullest measure of credit for bringing to Pittsburgh a yearly exhibit of such high character and scope. It is a matter of no small importance that added to the fame which has been secured to Pittsburgh as an art centre through its great yearly display of paintings—there should be added an annual salon such as is not enjoyed by any other city in the country of another art now risen to its well-merited heights and universal recognition.

It is a special gratification for us to be able to show our readers such fine examples chosen from this exhibit by the art committee. An added evidence of the decided progress pictorial art is making in this country. When one considers the large number of entries made and the difficulty of adequately handling these prints the officers deserve special commendation for the efficient and careful manner of promptly returning each print to the owner.

Mr. W. H. Porterfield's excellent and full review of this notable exhibit in this number is sure to be read with more than uncommon interest.

The officers of the Photographic Section are: O. C. Reiter, President; Dr. D. R. Breed, vice-president; Charles E. Beeson, 1900 Frick Building, secretary-treasurer; S. A. Martin, print director; W. A. Dick, lantern slide director.

Norman S. Wooldridge, Thomas Reed Hartley, Walter C. Meller, executive committee.

The acting members are: George Alexander, Elizabeth R. Allen, Charles I. Berg, Charles Booz, Kathn. Brucherseifer, C. W. Christiansen, Alvin Langdon Coburn, Imogen Cunningham, Stepan de Kosenko, John H. Garo, John W. Gillies, William A. Guyton, Spencer Kellogg, Jr., E. I. McPhail, S. A. Martin, N. S. Wooldridge, W. H. Porterfield, A. Romano, Dr. D. J. Ruzicka, H. W. Schonewolf, Emil Strub, Everitt Kilburn Taylor.

Course of Photography at Columbia University, New York

This set of courses is primarily designed to supply the wants of progressive amateurs who wish to go beyond the stage of doing their work by rule-of-thumb methods, and desire to obtain a thorough fundamental knowledge of the apparatus and processes they make use of. It is not supposed to take the place of manuals or handbooks on manipulation and photographic technic, but to clear up the many points which continually come up in photographic work, the explanations of which are so difficult to extract from scientific treatises on the subject and are so often incorrectly given in popular articles.

Prerequisite: Photography e1 or its equivalent. Prospective students should confer with the instructor.

There is a University fee of $5 for the academic year or any part thereof.

For further information address the Secretary of Columbia University, or call at the office of Extension Teaching, Room 301 University Hall.

Tenth Annual Exhibition M. A. A. A. Camera Club

The M. A. A. A. Camera Club of Montreal held its Tenth Annual Exhibition from April 10 to 15 inclusive, in the club rooms, 250 Peel Street.

Exhibits were received from many parts of Canada and the United States, and also from Great Britain.

Notwithstanding the unsettled conditions incident to the war, the artistic quality of the work submitted has been very gratifying and made possible a very presentable exhibition of amateur photography.

Sir. William Brymner (President of the Royal Canadian Academy), Mr. Sidney Carter, and Mr. T. H. Dupras acted as judges.

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The prizes were divided into four classes: figure studies, landscapes, waterscapes, and genre, a silver and bronze medal being awarded in each class.

The Prize and Honorable Mention list was as follows:

Class A: Figure Studies. (1) O. L. Griffith, "Position from Dance"; (2) W. G. Shields, "The Orange Girl." Honorable Mention, O. L. Griffith, "Figure from a Frieze."

Class B: Landscapes. (1) B. J. Morris, "Quiescence"; (2) C. W. Christiansen, "Prairie Giants." Honorable Mention: H. H. Hyde, "Burgundian Landscape"; B. J. Morris, "The Temple"; B. J. Morris, "A Hoosier Moon."

Class C: Waterscapes. (1) H. H. Hyde, "Chateau de Chillon"; (2) William H. Rabe, "The Messenger."

Class D: Genre. (1) William H. Rabe, "The Scribe"; (2) John P. Edwards, "The Court Verochio." Honorable Mention, William H. Rabe, "Interested."

Metol Substitute

During the progress of the European war, The Berlin Aniline Works announce they are unable to import "Agfa" products, and realizing the serious handicap, under which the photographic trade is now working they have succeeded in inducing a reliable chemist to produce a "Metol" substitute which they find to be satisfactory.

Full information will be given by writing the selling agents at 213 Water Street, New York City.

The Thirty-sixth Annual Convention Photographers' Association of America Wigmore Coliseum Cleveland, O., the Week of July 24

This will be a practical convention.

There seems to be a general demand from photographers in all sections of the country for information and suggestions showing how to make the business more successful from a financial standpoint. In response to this appeal, the Executive Board of the P. A. of A. decided to make the program of the Cleveland Convention full of business from beginning to end.

It is an acknowledged fact that the first requisite of a successful business is service. Service means satisfaction to the patron in every particular. So then we must first help the photographer to make better pictures. With this purpose in view, there will be the exhibit of pictures for which every member of the Association is not only invited but expected to send prints.

The exhibits will be judged and rated by three competent judges (selected by a postal vote of the membership). Rating cards with criticisms will be mailed to each exhibitor after the Convention.

Professor Edward Lake, Instructor of Art at the University of Illinois, will lecture on "Art Principles as Applied to Photography." Those who heard Professor Lake last year will remember that he gave a most comprehensive and instructive talk. His message this year will be even more helpful than the one he gave at Indianapolis.

Mr. L. B. Jones, of the Eastman Kodak Company, will lecture on "Studio Advertising." There is no man in the country better qualified to tell the photographer how to advertise his studio and his business, and how not to do it, than Mr. Jones.

Mr. Tim Thrift, of the Multigraph Company, will give us some timely suggestions in his lecture on "Direct by Mail Advertising."

Mr. C. H. Claudy, the well-known writer and lecturer on subjects interesting to photographers, will use for his subject, "The Photographer as a Business man."

Mr. Anderson Pace, of the Produce Terminal Exchange, Chicago, Illinois, will talk on "Personality in Business."

The commercial photographers and all portrait workers who do commercial business will be given special attention this year. Mr. W. H. Bass, of Indianapolis, one of the most successful commercial photographers in the country, will talk on "Building a Business." This lecture is more particularly for the commercial man.

Then there will be a query box and symposium led by "Billy Sunday" Agler. Those who have had the pleasure of hearing Mr. Agler preside at a meeting of this kind know it will be lively, interesting, and instructive. If you are one of the timid ones who cannot talk in public you may make use of this opportunity, not only to secure information, but also to pass along ideas. If you cannot tell the story yourself, write it, and put it in the box. The Executive Board wants this feature to be one of the most instructive and helpful numbers of the program.

The formal demonstrations will be by Miss Pearl Grace Loehr, of New York City, and Mr. Edward H. Weston, of Tropico, Cal. Miss Loehr and her work are so well known that she hardly needs an introduction. She, with her regular assistant, will show us how they make the beautiful home portraits which have made her work so popular.

Mr. Weston specializes in pictorial portraiture. While he is but a young man, his work has won honors and admiration both here and abroad. I am sure our members will be glad of the opportunity of seeing Mr. Weston work.

You have all admired the beautiful pictures of ladies and children made in the gardens and on the lawns by Mr. Clifford Norton. Mr. Norton has kindly consented to make some sittings in one of the parks of Cleveland one afternoon during the Convention. One photographer told me that he considered this one demonstration worth all it would cost him to attend the Convention.

Mr. Heiser, one of the successful commercial photographers, will give a demonstration of how he handles objects that are particularly difficult to photograph. This demonstration will be particularly instructive to the commercial men, but of interest to all.

Then we are to spend just one hour each

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morning under the light with three or four of the best-known and most successful camera men. Each man will spend fifteen to twenty minutes showing some stunt that he has found helpful in his every-day negative making. Their names will be announced later.

An expert background worker and colorist will be kept busy working in backgrounds on negatives and prints. This work will be done both by hand and with the air-brush. The demonstration will be informal and members are expected to ask questions and to learn all they can.

Receptionists will be on hand to show you all how to sell pictures, how to show proofs, increase orders, and how to get from every sitting you make as large an order as it should produce.

The manufacturers and dealers have never had such facilities for making an impressive show as they have at the Coliseum. Here are 65,000 square feet of floor space, all on one floor. The entrance is directly in the centre of the building, so there will be no choice of space. The manufacturers' and dealers' show will undoubtedly be the best one ever shown at a photographers' convention. This will be a splendid opportunity for you to see the newest things in photography and to purchase your supplies for fall and winter business.

The social features will not be forgotten. Among other entertainments planned, the manufacturers and dealers, who entertain us so royally each year, are going to take us to Cedar Point for a day's outing. Cedar Point, "The Atlantic City of the West," is about four hours from Cleveland by boat or one and a half hours by rail. It is proposed to take us to the Point in the morning, spend the afternoon there, and return in the evening. Can you imagine a more delightful trip for a July day than this?

This is an outline of what the Executive Board has planned. If this is a program that appeals to you, get busy on your picture exhibit, begin to save your dimes, and arrange to be in Cleveland from July 24 to 29, inclusive.

A New Photographic Paper

Messrs. Willis and Clements, of Philadelphia, are the sole agents in this country for the new "Japine Silver" paper. We have examined this paper and find it an inexpensive, simple process, giving rich, brilliant sepia tones. It deserves a good trial.

Hydroquinone Supply

The Du Pont Chemical Works is now manufacturing hydroquinone on a small scale, and it is expected that hydroquinone manufactured in large amounts will soon be a standard Du Pont chemical product.

National Highways Association Offers Prizes

Washington, April 9.—A nation-wide photographic contest in the interest of the "Good Roads Everywhere" movement, with cash prizes of $2600 open to everybody, was announced at the National Highways Association headquarters here today.

Colonel Theodore Roosevelt and the two well-known writers, Miss Ida Tarbell and Mr. Mark Sullivan, will serve as judges in the contest.

The photographs selected in the competition will be used to establish in Washington a national exhibit on the good roads problem designed primarily to promote a nationally conceived scheme of highways.

The cash prizes of $2600 were subscribed by General Coleman du Pont, Chairman of the Board of National Councillors, and Charles Henry Davis, President of the National Highways Association. The competition will be known as the Du Pont-Davis Road Photograph Prize Contest.

The first prize, to be given for the most striking (good or bad) road photograph, will be a $500 cash award. In all there will be 166 cash prizes awarded.

There will be 5 second prizes of $100 each, 20 third prizes of $25 each, 40 fourth prizes of $15 each, and 100 fifth prizes at $5 each, making 166 chances in all for each person entering the contest.

The competition will be kept open for eight months, closing at noon, Tuesday, November 7. All photographs should be addressed to "Good Roads Everywhere" Photograph Contest, National Highways Association, Washington, D. C.

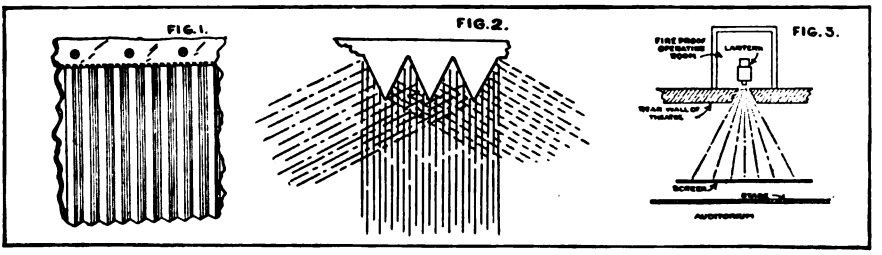
A Cinematograph Screen that Does Not Need Darkness

According to the latest statistics, nearly 16,000,000 people frequent daily the "movie" shows here in the United States. And there are fully 18,000 of these show places in operation. Darkness is essential to successful display, and this needful gloom has been abused more or less seriously. To avoid these consequences the laws of some States require that the picture theatres be illumined every fifteen minutes during the show. The reels are highly inflammable, and panics occasioned by their conflagration have more than once caused grave loss of life.

But now, says *The Scientific American*, thanks to the successful development of a satisfactory translucent screen, it is not only possible to greatly lessen the hazards incident to a darkened showplace of this sort, but daylight movies are practicable. In other words, with the screen invented and developed by John F. R. Troeger, pictures can be projected without the usual enveloping gloom. The hall can be fully illuminated. Instead of placing the projecting lantern in the theatre and among the spectators, the translucent screen makes it feasible to locate this apparatus back of the theatre and in a fireproof room—a single opening in the intervening wall sufficing for the projecting rays to reach the screen in front of it. Should anything go wrong with the lantern, there would be nothing to alarm the audience.

This fireproof screen, because the light rays

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FEATURES AND PRINCIPLES INVOLVED IN THE NEW MOTION PICTURE SCREEN

FIG. 1.—Corrugated surface of the screen. FIG. 2.—Illustrating the broad principle upon which the ribs or prisms cast the picture rays directly ahead and on both sides. FIG. 3.—General plan of a thoroughly safe motion-picture installation made possible by the translucent screen.

pass on directly to the spectators, and because of the nearness of the projector to the screen, permits of a very high illumination of the image, contrary to the usual white screen and the more remote lantern. Further, because the surrounding atmosphere is lighted up the eyes are not taxed by the contrast between the ordinary darkened hall and the more or less dazzling white screen. Besides this, the spectator gets a more realistic picture and one with but little distortion, no matter where he may sit in the house. This is due to the texture of the surface of the Troeger screen.

The front of this screen is marked vertically by very fine ribs or prisms, and these serve to show the picture with but little lateral foreshortening, even when the point of view is well off to right or left. The pictures, besides, are truer to Nature than the photographs on the films. That is to say, they have more depth and are not marked by that "flatness)' so common to most motion-picture displays.

The camera is a one-eyed instrument, and two eyes are necessary to get the double image which produces the sense of depth. The projecting apparatus ordinarily simply reproduces the flat photograph. But the ribs on the Troeger screen give our two eyes the duplex images we are accustomed to, and thus we get the so-called stereoscopic effect which nature intends we shall have when viewing any object that has form and not flatness.

For educational purposes a translucent screen of this character is much to be desired, because it permits the lecturer to see his audience and thus to promote sympathy. At the same time the spectator's attention is apt to be far more constant, and there is less likelihood of the eyes being tired or of a hypnotic effect induced by glare.

MEMORIAL FUND

THE council of the Royal Photographic Society of Great Britain have appointed the following committee to consider the question of a memorial fund to be established to the memory of Dr. Ferdinand Hurter and Mr. Vero C. Driffield: Sir W. de W. Abney, Major-General Waterhouse, Mr. George E. Brown, editor of the *British Journal of Photography*, Mr. F. F. Renwick, secretary and Mr. W. B. Ferguson, treasurer.

Prof. E. J. Wall (of Syracuse University, Syracuse, N. Y.) has been asked to act as an auxiliary treasurer for this country, so that Americans, who wish to subscribe to this memorial fund might have the opportunity of doing so.

Messrs. Hurter and Driffield laid the foundation of all modern scientific photography. To them also is due actually the discovery of the rapid dry plate of the present day, and photographers owe to them a very great debt of gratitude for the work which they did, a debt which it is now desired to recognize in a permanent memorial. It is hoped that the memorial will take the form of a reprint of all articles published by Messrs. Hurter and Driffield, together with explanatory notes and comments by other workers, as well as an annual lecture to be delivered in their honor and published in the photographic press.

Subscriptions to any extent, no matter how small, will be gladly received.

THE ANNUAL EXHIBITION OF THE FOTOCRAFT

THE Fotocraft announces its annual exhibition, which will open to the public on May 15, and close May 27, 1916. The exhibition will consist of original works in photography and painting. No exhibitor may submit more than twelve pictures.

Work must be sent to the Fotocraft, care of Public Library, Bangor, Maine, prepaid, on or before May 5, 1916, and all entries should be sent to Miss Alice G. Welch, Secretary, 125 Essex Street, Bangor, Maine, not later than May 1.

All pictures must be framed, either with or without glass, and plainly marked on the entry card. Additional cards may be obtained from the Secretary.

Every work entered will be submitted to the jury.

Pictures from out-of-town exhibitors will be returned promptly on close of exhibition.

The management will use all reasonable care to prevent loss or damage to pictures in its charge, but will not be responsible for such occurrence.

Private view Monday Evening, May 15, at 7 o'clock.

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Death of Howard Magill Phillips

Howard Magill Phillips, who was associated with his brother Ryland W. Phillips, conducting the Phillips Studio, 1507 Walnut Street, Philadelphia, died from an acute atack of pneumonia on March 31, at his home 6809 Cresheim Road, Germantown, Pa. Mr. Phillips who was forty-eight years of age, suddenly became ill March 26, and steadily grew worse until his death.

He was adept at his art through training from his father, Henry C. Phillips, who was a member of the firm of Broadbent & Phillips for many years.

Mr. Phillips had been engaged in business himself for the past quarter of a century and had built up a clientele that included many prominent people, although his efforts were confined chiefly to the business end of the studio. He is survived by his wife, Annette Hall Phillips, his mother and his brother.

The 1916 Kodak Advertising Competition

Ten prizes, $100 to $1000 each, for the best pictures for illustrating kodak advertising amounting to $3000 in cash.

The backbone of our national magazine advertising is based on photographs that we receive through these annual competitions, pictures that tell of the charm of picture-making by the simple kodak method.

These pictures are not necessarily pictures made with kodaks, but are pictures showing kodaks or Brownies in action, pictures that suggest the delights of amateur photography.

They are not for sample print work, but are for *illustrating* advertisements, are for use in telling the story of the witchery of kodakery.

The use of photographs as illustrations in advertising is growing steadily, rapidly. For the photographer who goes thoughtfully and carefully at it there is good money in making such pictures. There is a growing market. Our competitions offer to the photographer an interesting way of taking up such work. And the prizes are well worth while. — Eastman Kodak Co.

Federal Photographers' Society

The monthly meeting of this Society was held Friday, March 10, at 8.15 P.M., in the main auditorium, New National Museum, Washington D. C. The feature was an exhibition of art motion-picture films of "our national parks," which were taken and exhibited by Mr. H. T. Cowling, official photographer, Interior Department. Mr. Cowling is also vice-president of the Society.

Many of these films were shown for the first time in public, and the announcement of this exhibition attracted a large crowd owing to the reputation of Mr. Cowling as a scenic artist. The films were beautifully colored in single and dual tones, and were unanimously declared by the members of the Society to be the finest art motion pictures which have yet been produced of "Our National Scenery." Many of the subjects were photographed for the first time, and showed striking scenes in the Yosemite, Yellowstone, Crater Lake and Glacier National Parks, and the Grand Cañon of the Colorado in Arizona, as well as scenes on the Navajo and Blackfeet Indian Reservations.

One of the reels taken in Glacier National Park showed the Blackfeet Indians celebrating their "Medicine Elk Ceremony," in the production of which it was necessary for Mr. Cowling to be adopted into the Blackfeet Tribe in order to gain admittance into their medicine lodges. These films are being circulated by the Department of the Interior under the supervision of the assistant secretary, Stephen T. Mather, in connection with a "See America First" campaign.

A High Standard Shutter

Photographic workers who are not familiar with the new and excellent features of the latest and improved Ilex Shutter should get in touch at once with the makers, the Ilex Shutter Co., Ilex Circle, Rochester, N. Y. This standard shutter has proved itself by the highest of tests to be accurate, reliable, and efficient. The correct exposure to produce a good negative is what is required, and the speed of arrested motion is generally of but secondary importance. A shutter which only provides one of these important considerations is a poor shutter but one that provides *both* is of the best class. Such is the Ilex and one can decide upon the purchase without any misgivings.

The New Wallensak Catalogue

We are in receipt of a copy of the handsome catalogue just issued by the Wallensak Optical Co., of Rochester, N. Y.

It gives full information concerning the excellent line of lenses manufactured by this firm; and, in addition, there are many reproductions of most interesting examples of photographic work. Our readers should send for a copy, as it will prove particularly interesting at this time with the photographic season about to open for good throughout the country, and one naturally wishes to know concerning the new goods offered. It is sent gladly upon request by the firm from its office in Rochester.

Labels for Glass Bottles

The following simple and effective means of labelling glass bottles may be of use to some readers. Take a piece of thin paper, and on this, in fairly bold reversed type, write the name required in waterproof Indian ink, then cut to the size of the label. This is then stuck on to the bottle, with seccotine preferably, with the written side to the glass. When this has adhered coat it with two or three coats of negative varnish, which will make the paper translucent and the lettering show clearly through. The label will then be easily decipherable, even in the ruby light, by holding the bottle up to the lamp and looking through it, while also having the advantage of not staining easily, nor coming off when wet.—Printer, in *British Journal of Photography*.

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Awards at Eleventh Annual Exhibition John Wanamaker, March 1–17, 1916

Speaking of the competition, Mr. Alfred Steiglitz, one of the judges, said: "The judges had no great difficulty in selecting the prize pictures from the fourteen hundred photographs submitted to them, in spite of the fact that they were unusually strict this year, and that the standard required for acceptance for mentioning was higher. Imitation of paintings and manipulated prints were unanimously condemned by the judges."

Prize Winners: *First Prize*, $100. "The Shaving of Shagpat." Charles B. Keeler, Cedar Rapids, Iowa.

Second Prize, $50. "The Launching." Charles O. Haimovitz, Philadelphia, Pa.

Third Prize, $25. "Bacio della Luna." Williamina Parrish, St. Louis, Mo.

Five $10 *Prizes*. "Pennsylvania Station," Thomas C. Martindale, Philadelphia, Pa.; "Toxophilus," Edward Henry Weston, Tropico, Cal.; "A Stair of Romance," Roger B. Whitman, New York City; "The Porterfield Poplar," Karl Struss, New York City; "The Butter and Egg Girl," Mary W. Wiltse, Philadelphia, Pa.

Ten $5 *Prizes*. "An Old Ballade," Alice Boughton, New York City; "The Approaching Storm," Ernest L. Crandall, Washington, D. C.; "In High Altitudes," Rudolph Einwald, Milwaukee, Wis.; "The Goddess," W. G. Fitz, Philadelphia, Pa.; "West Point Cadets," H. P. Kingsmore, Philadelphia, Pa.; "Siegfried," Williamina Parrish, St. Louis, Mo.; "The Phantom Span," H. Crowell Pepper, Cleveland, Ohio; "Along the Canal," W. H. Porterfield, Buffalo, N. Y.; "Florentine Pines," Karl Struss, New York City; "Dolores," Edw. H. Weston, Tropico, Cal.

Honorable Mention. "The Alamo," Beatrice B. Bell, Crossby, Minn.; "Sunset in Mid-Ocean," J. Sidney Bradford, Philadelphia, Pa.; "A Summer's Day," Edwin Dunning, New York City; "O'er the Farms," John Paul Edwards, Sacramento, Cal.; "The Spring Song," W. G. Fitz, Philadelphia, Pa.; "Whispering Waters," W. G. Fitz, Philadelphia, Pa.; "Portrait Study," John Wallace Gillies, New York; "Snow Scene," John Wallace Gillies, New York; "Reflections," Edward J. Hogan, Trenton, N. J.; "The Hill Slope in Winter," Charles B. Keeler, Cedar Rapids, Iowa; "In Italy," Charles B. Keeler, Cedar Rapids, Iowa; "The White House," Charles B. Keeler, Cedar Rapids, Iowa; "The Stream Test," H. P. Kingsmore, Philadelphia, Pa.; "Boyhood's Happy Hours," Harry S. Hood, Philadelphia, Pa.; "Swan Song," Williamina Parrish, St. Louis, Mo.; "Ghosts," Williamina Parrish, St. Louis, Mo.; "Christmas Shoppers," H. J. Peiser, Philadelphia, Pa.; "Sky Scrapers," W. H. Porterfield, Buffalo, N. Y.; "Dawn," W. H. Porterfield, Buffalo, N. Y.; "Trees of Lombardy," W. H. Porterfield, Buffalo, N. Y. "Homeward," W. H. Porterfield, Buffalo, N. Y.; "Evening after the Storm," W. C. Sawyer, Los Angeles; "A Street," Karl Struss, New York City; "Pennsylvania Station," Karl Struss, New York City; "Soap Bubbles," Karl Struss, New York City; "National Capitol," Karl Struss, New York City; "Into the Sunlight," Karl Struss, New York City; "The Cliffs," Karl Struss, New York City; "Grand Central Station," Karl Struss, New York City; "Mid-day Gossip," Henry Troth, Philadelphia, Pa.; "Twilight," Sanborn Young, New York City; "Bit of Bleeker Street," Sanborn Young, New York City; "Sunshine and Haze," Sanborn Young, New York City; "Nude," E. H. Weston, Tropico, Cal.; "Child's Study in Gray," E. H. Weston, Tropico, Cal; "Maud Allan," E. H. Weston, Tropico, Cal.

Trying to Buy and Sell Cheap

We find in our correspondence that there is a certain class of photographers who try to fix the price of photographs at the lowest possible notch, believing that they can get business only be selling cheap or at bargain prices, and then they want to buy everything cheap, so as to eke out a small profit for themselves.

One of these photographers is now advertising one dozen folders, 4 x 6 size, for 75 cents, and is complaining because we have not got a folder cheap enough for him.

If it is a standard article, any man who cuts the price can get the business, but there is no standard in the photographic business except the one which each photographer must create for himself, and he can get his own price when he can show to his customers and the people that the work is worth what he asks for it.

Those who are always trying to buy the cheapest plates, the cheapest paper, the cheapest chemicals, and the cheapest mounts are of no benefit to anybody, not even themselves. They are right on the level with the so-called itinerant photographer, who travels from place to place, buying all the left-over stock which the stock house has, and delivering the poorest, cheapest pictures that he can as long as he can get his money for them.

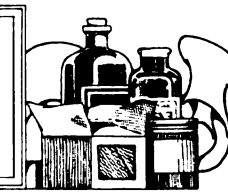
When business is a little quiet, don't think that by cutting the price you are going to improve it. If business is quiet with you, it is quiet with everyone else, and the results which you expect and want to get are obtained by doing a little more hustling, advertising, and pushing photographs; keep your name and the new slogan—*Your Friends can buy Anything You Can Give Them—Except Your Photograph*—before the people all the time. Buy the best goods which you can buy, make the best negatives and the best prints you know how, and charge a price for them. If you are not capable of doing this, then close up your studio and go to some school or to some photographer until you have learned the business.—*Ohio Photo News.*

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THE WORKROOM

By the Head Operator



INTENSIFICATION
SUBSTITUTES FOR BROMIDE IN THE DEVELOPER
HOW TO MAKE A PHOTO-MICROGRAPH
PERMANGANATE BLEACH FOR SULPHIDE TONING
PHOTOGRAPHIC PRODUCTION OF A LITHOGRAPHIC KEY ON ZINC
BROMIDE PHOTO-LITHO TRANSFERS
PHOTOGRAPHIC GLAZING
SUBSTITUTE FOR OPAL
CONVERTING A RAPID INTO A WIDE-ANGLE RECTILINEAR
NOTE FOR FILM USERS
TIP FOR STEREOSCOPIC WORKERS
DRYING OF NEGATIVES
DEFERRED FIXATION
SIMPLE USEFUL LENS FORMULA
GROUND GLASS AND EXPOSURES
CALCULATING EXPOSURES IN ENLARGING BY ARTIFICIAL LIGHT
EXPOSURE IN DAYLIGHT ENLARGING
FRAME OF BOLTING SILK OR CHIFFON
PERSULPHATE FOR STAINS
ENCLOSED ARCS AND BLUISH ORIGINALS
SUBSTITUTES FOR POTASSIUM SALTS
DOLLARS AND SENSE

INTENSIFICATION

IF we never made mistakes in exposure and development after-treatment of the negative would be unnecessary. Intensification and reduction would be interesting laboratory experiments, rather than necessary operations as they are now, at any rate for amateur workers.

Of all methods of intensification probably the most common are based on the use of mercury compounds. Satisfactory if worked properly and without the slightest danger to health unless one gets thirsty and drinks the same.

The following abstract of a lecture recently given by Mr. W. T. P. Cunningham before the Royal Photographic Society of Great Britain may be of interest:

There are several ways by which intensification can be effected. The first and most usual way is to add something to the original grain of silver in the negative film by certain chemical processes, and by the increase of their size give extra opacity. A second method is to alter the color of the deposit in the film to a more non-actinic color, which is equivalent to extra density of the original color. A third method is to add to the original film a new film which, by suitable treatment, reproduces the original film and adds density that way. Many processes combine the first and second methods.

To choose the best intensifier is a bewildering task to the less expert worker, and while he cannot do better than ask an expert worker to guide him, I think sometimes the ease with which expert workers, trained in chemical manipulation in many cases, can use complicated and difficult methods leads them to advise processes, not perhaps the most suitable to the less expert worker.

I remember a few years ago a reader asked the editor of the *Amateur Photographer* to say what was the best intensifier, and the answer and formulæ given were practically that known as the Monckhoven process. It may, perhaps, be one of the best in efficiency, but even if so, it most assuredly is not the best for the less expert worker. It contains mercuric chloride and potassium cyanide, both most deadly poisons, also silver nitrate. The solution has to be mixed in a very particular way or failure results. A plentiful supply of distilled water is required, and I venture to say that a lot of the blacking power of the silver is misplaced on to the fingers, benches, etc., which is a waste of money—and in these war times that won't do—so we leave it.

There are innumerable formulæ for utilizing the power of mercury to intensify the silver grain, some of which also alter the color of the deposit. The best known is to bleach the negative in a solution of mercuric chloride, rinse in hydrochloric acid, wash thoroughly and blacken with sulphite of soda for slight intensification, ammonia for fair intensification, and sulphide solution for the maximum, or redevelop the bleached image with ferrous oxalate, the latter method permitting the whole process to be repeated over and over and a further access of density obtained. Three or four intensifications with mercury and ferrous oxalate would bring the faintest ghost of an image to an almost unprintable density. This is the best method for the scientific worker. It produces an equal change throughout all the gradations in proportion to the amount of silver present. The added matter is black. It is permanent. These are the scientist's requirements, and Mr. Jones has proved them fully satisfied by this method, which he has consistently advocated for so many years.

Other methods involve the use of iodide of mercury, and these are very convenient and simple methods; they change the color of the deposit somewhat as well as adding an amalgam of mercury to each grain of silver in the film. Copper, uranium or lead salts are also used, most of which alter the color of the deposit, but for several reasons are not easy to work, and many of the results are not at all permanent.

I have no new or exclusive method to bring before your notice tonight, but I have found the chromium method investigated by Messrs. Piper and Carnegie answer my needs in a thoroughly satisfactory way, and, while it does not quite satisfy some scientists' requirements, for amateur uses it does all that is wanted. The intensification is by means of an enlargement of the grains by the addition of a chromium compound to the silver grains.

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Within certain limits and with care in manipulation it gives a good black color. It can give a slight yellowish stain, which is mostly noticeable in the deep deposits, and adds to the printing value; it does not, however, stain the clear shadows unless washing between the processes is neglected by the operator. It is very easy to use, cheap, and very dangerous or poisonous chemicals are not required. It can be modified to give slight, moderate or great intensification as required.

Foggy negatives are not suitable, as the fog is intensified equally with the image, and to get extra contrast, which, after all, is what we want, a considerable amount of intensification is necessary to give it, and that means a very dense negative. Fogged negatives should be cleared with ferricyanide of potassium and hypo.

In the course of his demonstration the lecturer said negatives should be completely fixed, and well washed for preference, although a short wash does not interfere with the process, but spoils bleaching solution.

The bleaching solution consists of bichromate of potassium and hydrochloric acid in weak solution, the exact proportions of each being an important and essential feature of the process.

Carnegie and Piper gave three formulæ:

	A	B	C
Bich. pot. .	5 gr.	10 gr.	10 gr.
Acid . . .	1 min.	5 min.	20 min
Water . . .	1 oz.	1 oz.	1 oz.

The first gives most intensification, the second a satisfactory intensification, and the third a less intensification.

The solution containing most acid gives the least intensification and to get more intensification the relative proportion of acid is reduced and the solution diluted.

Adherence to exact formulæ is necessary to ensure constant results. The bleaching process is a quick one, generally one or two minutes, and the plate should be removed as soon as it is bleached; the negative image turns a brownish buff color when viewed from the front or back of plate. The completion of the process is easily seen in a white dish by the disappearance of the last tinge of grayness. Long immersion gives less intensification, but is not noticeable unless immersion is very prolonged. The freshly bleached image shows a bright yellow stain from the bichromate. Wash until stain disappears, which requires from ten to thirty minutes according to the character of the plate. Then the plate is redeveloped, which takes about five minutes with amidol, which is recommended by the authors of the process, and is without doubt the best for the purpose, on account of its being so slightly alkaline.

Any alkaline developer would do equally well for blackening the image except that by its use you are likely to get frilling, more particularly if you repeat the whole process to get additional density. The plates will not stand alternate immersion in acid and alkaline solutions without frilling.

Freshly made developer is advisable to avoid stain. The operation can be carried out in ordinary light, and the plate does not require any other exposure. In fact, exposure to a very strong light is said to be inadvisable. After washing out the developer, and drying, the process is completed.

If intensification is not considered sufficient, the whole process can be repeated.

To shorten the washing out of the yellow stain, rinse one minute in a 2 per cent. solution of meta-bisulphite of potassium, pour on and off until the stain disappears, then rinse and redevelop. The solution must not be stronger than 2 per cent., nor must the plate be soaked in it, which would considerably reduce the density. Water is the safest eliminator of the yellow stain.

The bleaching solution keeps well, and can be used over and over again.

By varying the bleaching solution to A, B, or C, and by repetition, any required density is attained. Thus this one method is capable of doing all that is possible with any of the alternative methods in use. The process is easy, effective, and seems to be permanent. Failure is next to impossible.

The time for removing the bichromate stain seldom exceeds twenty minutes, being less than the time required to carry out mercury intensification, in which thorough washing is essential, to say nothing about the acid bath and distilled water. Chromium is easier and quicker than mercury, especially if meta-bisulphite of potassium is used; but while thorough washing is desirable, neglect does not have serious consequences as with mercury. It does not affect the permanency of results, but only adds a little stain, which may or may not be desirable.

The gain in opacity is always greater at the first operation than in subsequent ones.

The process can be utilized to reduce excessive contrast in under-exposed and over-developed negatives. The plate is thoroughly bleached and well washed, and treated with a weak developer until sufficient density is seen in the high lights, and while the white bleached image still appears in the denser portions of the plate it is then fixed in hypo and washed. This softens the high lights as well as strengthening the shadows, and considerably reduces halation if there is any. Some experience is necessary to obtain satisfactory results, and I would say practice on waste negatives before trying it on a valued one.

The essential things are a completely fixed plate and accuracy in making up the bleaching solution. Take the plate out directly it is completely bleached, wash until the yellow stain is removed from the clear film, and you cannot fail.

Stains are very rarely met with. Developers frequently stain when used in the light, and excessive light may be a cause of stain in this process. Development should never be done in direct sunlight or very strong light. Soft diffused daylight or artificial light is best.

Too much exposure to light during washing after bleaching may lead to the gelatin becoming hardened or tanned, and possibly causing uneven action, or the silver image may become solarized and refuse to develop.

Insufficient washing is the usual cause of yellowish stain. Incomplete fixing will cause a bad stain, but incomplete removal of the hypo will not, if the bleaching solution acts long enough

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or two baths are used, as the solution is a form of hypo eliminator.

SUBSTITUTES FOR BROMIDE IN THE DEVELOPER

FREE potassium bromide in the developer at starting forms with the silver bromide of the plate (in some way altered by light action and forming the "latent image," whatever that familiar phrase may really stand for) a combination which is less readily acted on by the developer, and so "restrains," or, as some prefer, "retards" the developing action, for a while at any rate. It thus holds back, as it were, the developer from responding to general feeble light action (which otherwise develops into "fog") until the developer has operated on the parts more strongly acted on by light. Thus we can see how *in a certain sense* a restrainer slows a plate's speed. But this phrase is very often seriously misunderstood, for any practical slowing of the plate by bromide calls for much more bromide than is needed to keep down fog.

The next point is that with many present-day plates and a suitable pyro-soda developer there is no fog worth considering (theoretically every plate gives some fog). Some plates, however, require a little fog restrainer.

The following have at some time or other been suggested as restrainers; the quantities are said to be equivalent to 1 gr. potass. bromide.

Sodium chloride (table salt), from 3 to 5 gr.

Ammonium chloride (sal ammoniac), from 2 to 3 gr.

Copper chloride, $\frac{1}{10}$ gr.

Zinc chloride, $\frac{1}{2}$ gr.

Acetic acid 10 minims.

Boracic (or boric) acid, three drops of 1 in 30 solution to 1 oz. developer.

The first on the list (table salt) is worth a careful trial. Copper chloride and acetic acid both have a softening action on gelatin and may be regarded with caution.

Some years ago there was much talk of the use of potassium ferrocyanide (yellow prussiate) as preventing fog and also giving strong density. This may be worth trying for such work as copying black and white originals, maps, plans, diagrams, tables, etc. It is said to work well with either pyro or hydroquinone. The strength suggested is about 20 gr. per ounce normal developer.

CITRATES

We now pass to another restrainer of special interest and properties, viz., citric acid and citrates.

Probably most readers know that it is not much, if any, use adding potassium bromide to the developer when once development has started, but in regard to the citrates the case is "quite other." This is explained on the theory that the citric acid (citrates) converts the ordinary alkaline developer into a physical developer by dissolving some of the silver which is not wanted in some places, and depositing it in other places where light action has been considerable. Twenty years ago it was common knowledge that cases of extreme overexposure could be more reliably saved by soda citrate than potassium bromide.

One reason why the citrates passed out of use and favor was their tendency to grow a ferment, mould, or fungus (Saccharomyces mycoderma, one of the yeasts) which decomposes the citrate in carbonic acid and water. But this growth is slower in strong than weak solutions, and can be prevented by the addition of a little salicylic acid. It is, however, better to dissolve only small quantities at a time so as to have fresh solutions. Unfortunately, the more familiar citrates of soda, ammonia, and potassium are somewhat deliquescent, so must be kept well corked in a dry place.

Citrates as retarders were introduced, we believe, by Mr. Watmough Webster some thirty years ago.

Roughly stated, about 5 gr. of citrate (any of the three just mentioned) would be a normal dose per ounce of developer.

Preparation of citrates from citric acid is quite a simple matter. Citric acid is dissolved in warm water and then the alkaline salt added a little at a time until the solution is neutral to litmus paper. In $\frac{1}{2}$ oz. water dissolve 72 gr. of powdered citric acid, then add slowly some one of the following salts until the acid is neutralized: Soda bicarbonate, *about* 90 gr.; or soda carbonate (crystals), 145 gr.; or potass. carbonate, 90 gr.; or strong liquid ammonia, 65 minims. Make up the bulk to 1 oz. with water; you then have approximately a 10 per cent. solution.

About 1 fluid dram added to 1 oz. of normal developer would be an average quantity. (Citric acid gives the characteristic acid flavor of lemons, limes, etc.)

PYRO WITH CITRIC ACID

If our brand of plates is *very* nearly fog-free, and we are anxious to get clean negatives for enlarging or slide making, it will probably meet our needs, if we introduce a *little* citric acid in the developer, where it will first act as an acid preservative, and then in the mixed developer serve to keep the plates fog-free.

Here is a reliable formula:

A

Pyro	20 gr.
Soda sulphite (crystals)	40 gr.
Citric acid	5 gr.
Water to	1 oz.

(Dissolve the sulphite in $\frac{1}{2}$ oz. water, add the citric acid, and then the pyro, and make up to 1 oz. with water. Use water that has been boiled and allowed to stand till cool.)

B

Soda carbonate (crystals)	$\frac{1}{2}$ oz.
Soda sulphite (crystals)	$\frac{1}{2}$ oz.
Water to	10 oz.

For outdoor work use 1 dram A plus 1 oz. B; for indoor work, portraiture, etc., $\frac{1}{2}$ dram A plus 1 oz. B; for strong-contrast negatives, 2 drams A plus 1 oz. B.

(A little of the citrate solution may be added when copying black and white subjects.)

REMINDERS

(1) Beginners may be reminded that a plate is more sensitive, *i. e.*, likely to be fogged (by

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dark-room light, for instance), where it is dry than when it is wet. (2) It is most important to shield the plate from *all* light whatever, at any rate until development is well started; the beginning of development is the most critical. (3) Fog may be the result of bad keeping of plates, too warm developer, too much alkali in developer, as well as defective dark-room light, also light while in the camera; *e. g.*, sun on lens, internal reflections from bellows, leaving plates in holders, etc. (4) If by due care you can get a negative practically free from fog without causing a restrainer, it probably will prove a better printer, though it may not look so pretty as one obtained with bromide, etc. (5) If only you carry on development *long enough*, you are pretty sure to get some fog with any plate, whether you use a restrainer or not. (6) The two most important points are to spare no trouble to get the exposure as ideally correct as possible, and to let the plate be little exposed to dark-room light of any kind, safe or otherwise, until it is fixed, or at any rate in the fixing bath.—*Amateur Photographer.*

How to Make a Photo-micrograph

A simple way in which you may use an ordinary camera in conjunction with the microscope for the production of photomicrographs can be easily arranged. The exposure can be made by various sorts of illumination, such as the light of an oil lamp. The dazzling glare of an electric arc, also present, can then be quickly switched off while the plate is developed and fixed. Thus in a few minutes the negative of the object beneath the microscope is available.

Place the microscope in a horizontal position and focus the object by looking through that instrument's eyepiece. Then set the lens of the camera at infinity point, just as you would set it for distant objects. If the camera has a fixed focus this is not necessary. It is then placed in front of the microscope with the lens close to the eyepiece. The camera is raised, if necessary, to the correct level by placing some support under it. It is preferable to set the camera lens at full aperature, so that the orifice of the cap of the eyepiece will act as a diaphragm. The exposure may be for five seconds or more, according to the nature of the object, the light, and the speed of the plate. The plate is of course developed as you prefer.

In this manner with an ordinary camera and a microscope anyone is equipped to take microscopic pictures. I have been able in this way to help Mr. Davis of the Knickerbocker Film Company to make moving pictures of microscopic objects such as germs and *paramecia*. There is no doubt that this is the first time this simple method has been used for cinematographic pictures. H. C.

Permanganate Bleach for Sulphide Toning at Almost One-twentieth Cost of Ferricyanide-bromide

In reference to the cost of bleach for sulphide toning, it is difficult to reckon up the cost of the ferricyanide mixture, as it is usually used repeatedly and strengthened occasionally, but I think it may be said that in practice the following will do equivalent work and with equal rapidity:

Ferricyanide	10 gr.
Bromide	15 gr.
Water	2½ oz.

The cost of this at present prices is 2½ cents.

Permanganate	2 gr.
Commercial sulphuric acid (oil of nitriol)	20 min.
Common salt	1½ to 2 dr.
Water	8 oz.

This costs about 1-15th of 2 cents. With hydrochloric acid the cost is more, but little more than ⅛ of 2 cents.

But cheapness is not the only advantage of the permanganate. Consider the following: (1) No need to get rid of the last traces of hypo; (2) no possibility of blue spots, which often occur with cheap bromide papers; (3) no washing between bleaching and sulphiding; (4) stock solutions keep perfectly (the mixed solution will keep a week or two in a bottle); (5) bright prints due to purity of tone; (6) the ease with which good intermediate tones between warm black and full sepia brown may be obtained by partial bleaching followed by sulphiding.

For this purpose the bleacher is used half strength, and for warm black the print—which must be thoroughly soaked with water—is flooded with the bleacher for ten seconds—not longer—before sulphiding. For other tones bleach longer.

I may add that the permanganate bleacher is generally regarded by all who have tried it in this neighborhood as in every way preferable to ferricyanide.—T. H. Greenall in *British Journal of Photography.*

The Photographic Production of a Lithographic Key on Zinc*

In the making of chromo-lithographs it is necessary that the artist should draw on the various stones used for multi-color printing in exactly the correct position, so that when the several colors are printed they will register with each other. In order to do this a tracing is usually made outlining the various patches of color, which outline is transferred to the different stones in an ink that merely stains and does not print, or the impression from the transfer is dusted with a powder, which is then "offset" onto the stone, the result being called a "key." It is obvious that some saving of time should be possible and a more exact result obtained if a photographic "key" could be easily produced.

Such a photographic key may be produced on stone by an application of the Kallitype process, as described by Brown (*Ferric and Heliographic Processes*, page 42).

The stone is coated with the following sensitive solution:

* Communication No. 36 from the Research Laboratory, Eastman Kodak Co.

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A

	Metric	Avoirdupois
Silver nitrate .	35 gm.	1 oz.—100 gr.
Water . . .	150 c.c.	5 oz.

Add concentrated ammonia until the white precipitate first formed is redissolved, and then add dilute sulphuric acid until the odor of ammonia almost disappears.

B

	Metric	Avoirdupois
Ferric ammonium citrate (green scales) . . .	26 gm.	400 gr.
Water . . .	200 c.c.	6 oz.—320 min.

Add B to A, and coat the stone with the mixture.

When dry, the stone is exposed under the negative until all detail in the high-lights is visible. A dark brown key is thus obtained which may be worked upon in the usual way, taking care not to expose the stone unnecessarily to light, as the same is not fixed.

It is impossible to work the above process on zinc, owing to the fact that the metal reacts with the sensitive solution, causing a deposit of metallic silver. By electro-plating the zinc with silver it was found possible to overcome this difficulty of precipitation, though it is not suggested that this is practicable in every-day work.

It was also found impossible to use sensitive coatings containing potassium ferricyanide, uranium nitrate, etc., owing to chemical action with the zinc.

Attempts were then made to produce a bleach-out dye image on the zinc plate, employing a mixture of dye, together with acetone bisulphite and thiosinamine, to act as sensitizers; but the bisulphite reacted with the zinc, producing zinc hydrosulphite, which, in turn, reduced the dye-stuff.

The problem was finally solved by adopting a modification of the method of Fox Talbot for producing "heliogravures" on copper. Two methods were tried, both gelatin and fish-glue being employed.

GELATIN METHOD

Taking zinc that is suitably grained, it is coated with the following solution:

	Metric	Avoirdupois
Gelatin . .	100 gm.	4 oz.
Ammonium bi-chromate . .	50 gm.	2 oz.
Water . . .	1000 c.c.	40 oz.

This should be coated at a temperature of about 30° C. or 85° F.

When dry, the plate is placed in a printing frame in contact with a positive, if a positive image is required, or a negative, if a negative image is not objected to, and exposed to a 25-ampère electric arc for ten minutes. The plate is then washed in cold water, in order to remove the soluble bichromate, and treated with a 5 per cent. solution of nitrate of silver for two or three minutes, after which the plate is rinsed and immersed in lye (10 per cent. solution of caustic soda) for several minutes in order to remove the gelatin, and then rinsed and dried, when it is ready for the lithographic artist. The silver image obtained may be easily removed by rubbing, and therefore the plate must be handled with care.

FISH-GLUE METHOD

A simpler method is to use the ordinary bichromated fish-glue of the photo-engraver. We have used the following formula, and also others, but none registering less than 7° or more than 10° on a Beaumé hydrometer:

	Metric	Avoirdupois
Glue	125 c.c.	4 oz.
Water . . .	250 c.c.	8 oz.
Ammonium bi-chromate . .	10 gm.	150 gr.

The exposure is the same as in the case of the gelatin; the plate is not washed, but placed at once in a solution of iron perchloride at 40° B. If no action occurs at this strength, water should be added very gradually until the darkening of the image begins. At this point the plate is withdrawn, rinsed, and the bichromated glue removed with lye (10 per cent. caustic soda) when it is ready for the lithographic artist's work. If the darkening is allowed to go on too far the image will blacken all over, beside commencing to etch the zinc, rather than merely stain it. This method has the advantage that the image is quite durable, and will stand very considerable rubbing.

The disadvantages of these methods are that a negative only gives a negative; a positive must be used if a positive image is required, and, secondly, the image is a black stain, and therefore not so easy for the lithographic artist to work on with the black crayon, as it would be if the stain were a different color—for example, red or blue.

Experiments are being undertaken to obviate these disadvantages, though, as regards the first, it is suggested that it should not be difficult for the lithographer to work on a negative image; every photographer has to do so. And, as regards the second, the image is really a bluish or brownish-black, and lithographic crayon can readily be distinguished upon it.

J. I. Crabtree.
A. J. Newton.

Bromide Photo-litho Transfers

We have had several inquiries from lithographers, asking advice and a formula for making transfers (especially enlargements) by the bromide process. This process is very little known on this continent, but is practised very extensively in England and also Continental Europe.

We have received from a correspondent, who is with a large litho establishment in England, the following formula which tells in detail the exact method used by them in producing photo-litho transfers. If our readers expect to do the finest work by this process, they will be disappointed, as it is best suited for large poster or line work and the half-tones made in this manner will be very coarse, indeed, in some cases only fifteen lines to the inch. However, when numerous colors are used, it mixes the screen up in such a way that the extreme coarseness

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is not so evident. This is true when the size is equal to a single sheet poster, which is 28 x 42 inches in this country.

Following is the formula:

Special care must be taken in the first place with the negative, which must be crisp and sharp in the very small highlights and perfectly clear and clean between the shadow dots. The whole success of this process depends on this being noted. In making the enlargement it is very necessary that a good glossy smooth surface be used. The reason for this is readily seen when the bromide print has to be inked up. Develop the bromide print in a much stronger developer than usually used. The following is a well-tried formula for the development of this type of print:

Metol	24 gr.
Hydroquinone	32 gr.
Potass. bromide	24 gr.
Sulphite of soda	432 gr.
Potass. carbonate	144 gr.
Water	10 oz.

A good development is essential, preferably one lasting six or seven minutes, to the above. The next step is bleaching the print, which must not be done until all developer is well washed out. It is not necessary to fix in hypo before bleaching providing the bleaching operation is to be carried out at once. The formula for the bleaching bath is as follows:

Water	10 oz.
Pure chromic acid, 10 per cent.	2 dr.
Bromide of potassium, 10 per cent.	2 oz.
Sulphate of copper, 10 per cent.	3½ oz.

The bleaching must be taken steadily and not rushed, the time taken being from twelve to fifteen minutes. The print assumes a lemon-yellow tint and may now be well washed for several minutes before fixing in hypo solution of half the usual strength. When fixed wash for several minutes. The next step is the inking or pigmenting. The pigmenting is an operation which must be carefully done. If the print has been allowed to dry it must be soaked again before pigmenting. Place the print face upward on a damp pad of blotting paper and remove the surface moisture with a damp rag. Sometimes blotting paper is used, but the difficulty with fluffiness from it makes damp rag a better method of removing surface moisture. Photo-litho ink thinned down with turps and then mixed with a little boiled oil will readily take to the print. The ink is applied by dabbling-rubbing action, using a good thick hog-hair brush. Take care that it is done evenly, otherwise the ink will clot and spoil the general effect. Having obtained an even coating allowing the print to stand for, say, two minutes to give the turps a chance to evaporate, then proceed to develop the print in warm water with a wad of cotton wool. It may now be transferred in the usual way of photo-litho transfers. The whole operation is nowhere near so complicated as the explanation seems.

The bromide paper to employ should have a smooth surface, such as Ilford glossy, Barnet slow enamel, or Eastman's glossy. Use a strong developer and develop for at least five minutes, and the print must be bleached and well washed. Bleacher:

Chromic acid (pure), 10 per cent.	80 min.
Potassium bromide, 10 per cent.	1½ oz.
Copper sulphate, 10 per cent.	2½ oz.
Water	8 oz.

Bleach for ten minutes, temperature between 65 degrees and 70 degrees Fahr. It is best used after being mixed three or four hours. When bleached, wash well and fix in the following: Hypo, 6 ounces; meta-bisulphate of potash, ½ ounce; water, 40 ounces. Wash for two or three minutes. For inking up, use Litho ink thinned with rectifier turps. Blot the print off with fluffless blotting paper and paint the ink on with a thick, soft brush, rubbing in well. Having obtained a thin coating of ink, allow turps to evaporate, and soak print in warm water for five minute and develop with pad of cotton wool. If the ink clogs and refuses to come away, wash off with turps and soak for five minutes in water, and wash over with a mixture of the following:

Ammonia, 88 per cent.	1 pt.
Glycerin	3 pt.
Water	10 pt.

Blot off well and proceed to ink again. Transfer as for ordinary photo-litho.

Photographic Glazing

Increased glazing, according to the distinguished English photographer, Mr. Edgar Senior, can be imparted at will to bromide prints, P. O. P. and some other papers which are made upon a glazed surface paper. The papers after they are washed should be placed in some solution of a hardening nature. Ordinary alum, chrom alum, or formalin will answer very nicely.

This treatment is particularly necessary in warm weather, for then the gelatin surface becomes very soft. Then it is likely to adhere to the surface used for squeegeeing despite all precautions taken to avoid this. If alum is employed as the hardening principle, a 5 per cent. solution should be employed. This, however, is not always successful in its action, so formalin is often employed with better advantage.

The strength of this latter solution should be about one ounce to ten or twenty ounces of water and the prints should be allowed to remain in for five or ten minutes and then washed in several changes of water. As for the materials to be used for squeezing the prints upon, these may be either of glass, ferrotype plates, or celluloid. The latter two are the least likely to cause any complication said Mr. Senior, such as the plates sticking.

If glass is used it is necessary to be thoroughly cleaned to the highest degree. Then it must be soaked for some hours in either of these two mixtures:

No. 1

Nitric acid	5 oz.
Water	20 oz.

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No. 2

Potassium bichromate . . .	1 oz.
Water	30 oz.
Sulphuric acid	1 oz.

This bichromate should be dissolved and then the solution be made perfectly cold before the sulphuric acid is added. This is introduced very gradually and is meantime stirred very vigorously. Since this mixture is very corrosive, great care is necessary in handling it.

After the glass plates have been soaked for several hours, they should be well washed in water and then be allowed to dry. They must now be polished with French chalk, which is dusted upon the plate and well rubbed over and finally dusted off again. If French chalk is not obtainable, a solution of beeswax in benzol or turpentine may be applied with a piece of rag or a tuft of cotton wool. Then the surface can be polished with any clean cloth.

Beeswax	15 gr.
Turpentine	1 oz.

The celluloic, ferrotype plate, or clean glass has this well rubbed over the surface and then polished off. The material is ready, the prints are taken from the washing water and laid face downward, and then squeegeed into contact. They are permitted to become quite dry before any attempt is made to strip them and on no account must the drying be at all accelerated by heat or the prints will be difficult if not impossible to remove from the support.

If difficulty is experienced in getting them off, it can best be prevented by drying the prints first and then rewetting them. If care be taken to have the surface of the material thoroughly well cleaned and prepared the prints will almost pop off by themselves, particularly if ferrotype plates have been used.

A Substitute for Opal

An emulsion of a pure white character, which can be poured upon glass to form a substitute for opal, can be made by means of zinc oxide and gelatin. There are formulæ which describe the making of such an emulsion with barium sulphate; but this is not satisfactory, as, although the sulphate is itself a dense white opaque powder, it appears to form a kind of solution in gelatin, and as it dries it loses a great deal of its opacity.

Zinc oxide is obtainable commercially, and for this purpose half an ounce of it may be ground up into a smooth thick cream with a mixture of two parts of water with one of glycerin.

Half an ounce of any ordinary gelatin is left soaking in four ounces of cold water until quite soft, and is then dissolved in the water by standing the vessel containing it in a basin of hot water. The zinc oxide mixture may also be heated in the same way, and then stirred into the gelatin. When the two are thoroughly incorporated the white creamy emulsion is strained through a couple of thicknesses of fine muslin, and is ready for coating on to the glass.

For this operation a levelling stand is a necessity. It may be made of a piece of plate glass, or a slate or marble slab, supported on three wooden wedges until its upper surface is exactly level. It is a convenience to wind thin string around it about an inch apart, so as to keep the glass plates from touching the surface of the slab, to which they might adhere if any of the gelatin had been spilt on the back of them. In any case the strings, which must not cross each other on the top side of the slab, or the glasses will no longer be level, also make it much easier to pick up the glasses.

The gelatin emulsion is strained into a vessel with a lip, and a pool of it is then poured on to the glass, which is tilted until the mixture flows all over it, and is placed on the levelling slab to set. When set the glass can be stood on edge, away from dust, for the coating to dry.

Anyone unaccustomed to handling gelatin solutions will find the operations are much easier if attention is given to keeping the mixture warm. It should never be put into a cold vessel; the funnel used in filtering it should be put into hot water for a few moments, the muslin wetted in hot water and squeezed out, and the glasses warmed before coating them.

If there is any difficulty in working as just described, the coating may be done by putting the glass on the slab, then pouring on the mixture, and guiding it over the plate with a glass rod.—E. Legge.

Converting a Rapid into a Wide-angle Rectilinear

Looking at sectional diagrams of a rapid rectilinear and of a wide-angle rectlinear respectively, the close resemblance of the two lenses is manifest. The principal difference is to be found in the fact that, in the case of the rapid rectilinear, the two combinations are separated by a tube, the length of which is usually greater than the diameter of the glasses. As a matter of fact, there is no other important difference between the two types. This separation is a necessity if the lens is to be used at a large aperture with a flat field; but it has the effect of limiting very greatly the angle of view which the lens will embrace. If we take a rapid rectilinear and remove the tube, substituting for it a very much shorter one, so that the two lenses are almost in contact, inserting in the middle of this short tube a comparatively small stop, it will be found that the angle included by the lens has been enormously increased by the process.

An old quarter-plate rapid rectilinear in the possession of the writer has been mounted up in this way, the tube being one of card into which the two lenses fit right up against a central stop an eighth of an inch in diameter. They are kept in place by lids like pill-box lids, perforated, of course, with holes about the diameter of the glasses themselves. It is important that these should go right up against the glasses, or some of the side rays will be cut off. The effect of this alteration is to shorten the focus of the lens by about half an inch, while it increases its covering power several times. The lens as originally issued does not allow much rise on a quarter-plate camera; the same lens as modified will cover a whole-plate right up to its corners. As its focus in the modified form is not much

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over five inches, it will be evident that it includes a very wide angle. The stop *f*/40 is a small one, it is true; but rapidity is not generally called for in the work for which a wide-angle lens is needed. The lens is in no way unfitted for its original purpose by the alteration which is here suggested, which, in view of the cost of another lens for wide-angle work on a large plate is a decided economy.—F. HOLT in *Photography.*

A NOTE FOR FILM USERS

WE often hear much of the liability of film negatives to scratches and other defects during printing operations, and this is probably due to the fact that the celluloid base is far more easily damaged than glass. As most of the scratched negatives one sees are scratched on the celluloid side, it behoves us to be especially careful in handling them, especially in the case of small ones from which enlargements are intended to be made, as any such defects are magnified to a surprising degree. One of the best ways of dealing with these scratches is to rub them very carefully with a small wad of soft rag moistened with methylated spirit. This will be found to remove much of their effect, though, of course, it will not remove them completely. Many film negatives are spoilt with a kind of scum that adheres to them. This may be removed in the same way; in fact, many workers do not realize as fully as they should that their negatives should be as clean as possible to ensure the best result in either prints or, more important still, enlargements. The deposit referred to above is frequently caused by lime in the washing water, but it will be found that most surface markings can be shifted with spirit applied as above. The film should be held flat on a piece of glass; otherwise ridges may occur.—*Amateur Photographer.*

A TIP FOR STEREOSCOPIC WORKERS

CHALKINESS or a "soot-and-whitewash" appearance in a "hard" stereoscopic picture may be partly overcome by printing one of the views considerably darker than the other, the result in the stereoscope being more agreeable than that produced by sunning down the two prints. Another dodge is the staining of one of the halves with one of the lighter colored dyes. When viewed in the stereoscope the exaggerated color of one picture is toned down by the chalky whites of the other, and some very pleasing and novel results may be obtained.—*Amateur Photographer.*

THE DRYING OF NEGATIVES

ONE of the minor troubles which afflict the photographer at this time of year is finding on examining the previous day's negatives that a certain proportion of them are only partially dry. It is then impossible to complete the drying quickly by heat or other means, otherwise uneven density will result, and a day is lost in consequence. Some workers never experience this trouble, and there are various reasons for their immunity, the principal being an exceptionally warm and well-ventilated workroom and the choice of a brand of plate which does not hold much moisture. In this latter connection it should be noted that there is a great difference in the absorbent properties of gelatin plates. Some coatings swell up to a considerable thickness and take a long time to dry, while others will dry in a few hours, even in a damp darkroom. Drying by immersion in spirit is very well for presswork or for an occasional plate in studio work, but it cannot be practised with batches of two or three hundred plates day by day. We have, therefore, to utilize what is generally called spontaneous drying under the best possible conditions.

To start with, there is a right and a wrong way of taking the plate from the final washing water, as at this stage the formation of "tears" may be caused or prevented. Some years ago a correspondent pointed out that if a plate were given a final rinse under the tap and transferred to the draining rack in as nearly as possible the position in which it was rinsed, an unbroken film of water was retained on the plate, and that this drained away without separating into drops upon the film. This we have tested repeatedly, and found it to be correct.

If more rapid drying be desired, it is a good plan to wipe the surface of the gelatin gently with a soft linen glass-cloth. There is no danger in doing this in cold weather, particularly when an acid fixing-bath has been used. The glass side should be wiped as well, since this removes a considerable amount of moisture from the vicinity of the next plate when placed in the rack. The rack itself should be chosen with regard to the work it has to do, and nothing is better than the open wire racks. Having no grooves, they do not leave a wet strip on two edges of the plate, and, as there is a clear inch between plate and plate, there is ample room for the circulation of dry air. Such a rack, with four or five tiers, can be placed in front of the studio stove when the day's work is done, and in the morning the plates will be found ready for the retoucher. Where the drying conditions are very bad, the calcium box which we have so often recommended will be found very serviceable. If the surface moisture is wiped or blotted off and the calcium well dried, complete desiccation is effected in about four hours.

Very rapid drying may be accomplished with the aid of formalin or alum, which harden the gelatin and permit of a considerable degree of heat being applied without any risk of melting the film. Immersion in the hardening solution should be for at least ten minutes, then the surface should be well rinsed, wiped as dry as possible, and the plates are ready for the drying rack, which may be placed quite near a stove. A single plate may be dried over a gas ring.

Intensified negatives are particularly likely to have "tears" form on the surface, and should therefore always be wiped to avoid the possibility of such formation, as, even if unlimited time be allowed for drying, there is a possibility of markings resulting from uneven drying.

The electric fan is a valuable aid to drying, but at the present season the draught caused is not always acceptable. When using a fan the plates dry more quickly if stood up separately on the little wire easels used for window display

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than if huddled in a rack. The plates should be placed in rows at such angles that the air current is deflected from one plate to another until it reaches the end of the board.—*British Journal of Photography.*

Deferred Fixation

J. E. C. gives a method of treatment for plates when developing soon after exposure, but postponing fixing until a later time. He does not advocate such deferred fixation, but recommends it only on the ground that it is much better to adopt this plan than to fix a negative and to defer a thorough washing until later. After development, rinse the negative for a moment, place it for one minute in weak hydrochloric acid, say 1 part of acid to 40 of water, and then wash it for a few minutes. The negative, when dry, may be exposed to daylight, and will be found gradually to darken. This darkening, if it went far enough, would no doubt ruin it, but two or three hours in diffused light seem to have no permanent effect. The creamy yellow darkens to a grayish violet, it is true, but this vanishes, or all but vanishes, when the negative is subsequently fixed.—*Photography.*

A Very Simple Useful Lens Formula

Among the many lens formulæ often quoted I do not remember having seen that about to be given, yet it is one of the most useful that one can keep in mind.

A 6-inch focus lens is $7\frac{1}{2}$ inches from the plate (image); what is the scale of the object to its image? Can you answer this off-hand? Subtract 6 from $7\frac{1}{2}$, getting $1\frac{1}{2}$; then divide 6 by $1\frac{1}{2}$, getting 4—the image is therefore one-fourth (linear) size of the object. Now suppose the image measures 1 inch on the ground-glass, then the object being four times as large must be 4 inches. Next, as it is four times the size of the image, it must therefore be four times as far away from the lens that the image is; *i. e.*, the object is four times $7\frac{1}{2}$ inches, *i. e.*, 30 inches from the lens.

Now suppose that a $5\frac{1}{4}$-inch focus lens is $5\frac{1}{2}$ inches from the plate. We subtract focal length $5\frac{1}{4}$ from the camera (plate-to-lens) distance, getting $\frac{1}{4}$ as difference. Dividing the focal length $5\frac{1}{4}$ by this $\frac{1}{4}$ difference, we learn that the object is 21 times the (linear) size of the image, and is 21 times as far away; *i. e.*, 21 times $5\frac{1}{2}$; *i. e.*, $115\frac{1}{2}$ inches, or 9 feet, $7\frac{1}{2}$ inches away.

The same question in a slightly different form is constantly cropping up. For example: My lens is 5-inch focus, and maximum camera extension 8 inches; what is the greatest image-to-object ratio possible? The same formula, viz., $\frac{\text{Lens focus}}{\text{Camera} - \text{lens focus}}$, here becomes $\frac{5}{8-5} = \frac{8}{3}$, *i. e.*, the object to image is 8 to 3, or image is three-eighths the size of the object. With a focussing-screen camera we can measure the size of the image on the ground-glass. Therefore if we know the distance of an object we can deduce its size, or if we know its size we can deduce its distance. Suppose our object is a church tower, and by pacing we find our camera is 30 yards from the foot of the tower. Our 5-inch focus lens gives us the image of the tower 2 inches long on the ground-glass. Then it is easy to see that the ratio of the focal length of the lens is to the size of the image as the distance of the camera is to the height of the tower. Thus as 5 is to 2 (inches) so is 30 yards, *i. e.*, 90 feet, to height of tower, *i. e.*, 225 feet. Again, a flagstaff on one side of a river is known to be 20 feet high. A 6-inch lens at the opposite side of the river gives the flagstaff image $\frac{1}{2}$ inch long; what is the width of the river? Our rule of three now runs: As $\frac{1}{2}$ is to 6 (*i. e.*, 1 to 12) so is 20 to river width, *i. e.*, 240 feet (80 yards).—*Amateur Photographer.*

Ground Glass and Exposures with Enlarging Lantern

The presence or absence of ground glass in the enlarging lantern affects exposure in a very material way. Of course, the ground glass increases exposure by absorbing a percentage of the light. This is obvious, and in many cases immaterial, for the exposure need not be long with a suitable light, negative and rapid lens. The exact exposure required is easily ascertained by means of a trial strip. The point to which attention should be called is that when using ground glass the relative value of the stops is the same as in daylight work or landscape exposures. That is, *f*/11 will require double the exposure of *f*/8. If the ground glass is not used, however, this relative value of the stop is not the same, for with proper adjustment of the light it is possible that almost as much light will pass through an *f*/11 aperature as through an *f*/8. The condenser transmits a cone of rays, and if the apex of this cone coincides with the position of the lens stop, any slight reduction of the aperture will probably cut off very little of the light and so shorten the exposure only slightly.—*British Journal of Photography.*

Calculating Exposures in Enlarging by Artificial Light

N. C. Deck uses a density scale negative as a means of classifying negatives and estimating exposures in enlarging. The method applies to negatives all made with the same developer, which has also been used in making the scale negative. This latter is printed by contact from a set of graduated strips built up like a multiple-tint actinometer frequently used. Ten gradations representing from one to twenty-six thicknesses of fairly transparent paper are numbered. On the negative the most transparent set is marked 1, and so on. From each of the negatives to be used a perfect contact bromide or gaslight print is taken, exposing and developing both at the same time. The highest number which can be read in the gradation images is thus the "density number" of each negative.

In enlarging, the ordinary negative is first adjusted in the carrier and the enlargement focussed. The graduation negative is then inserted and trial strips of bromide paper exposed across the numbered bands of the gradation

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negative, giving a series of seven exposures, each double the preceding, from 10 to 640 seconds. The strip is developed and fixed, and the number produced at each exposure noted As these strips will show a series of density numbers, it will be clear that under the working conditions at the time the exposure for a negative found to have a density number of 14 will be that required to produce No. 14 on the test strip. If the scale of the enlargement is changed allowance must be made for the fact.—*Aust. Phot. Jour.*

Exposure in Daylight Enlarging

A. Lockett advises the use of an actinometer as follows: The watch form, with a couple of small standard tints placed against an opening in the dial, under which fresh paper can be drawn as desired, is the most suitable. The best method of using is to have an extra aperture in the shutter, provided with a hinged lid or sliding door. Over this is fixed a projecting bracket about a foot long with a hook or wire arranged so that the actinometer may hang level with the aperture. The latter must be screened or curtained to prevent any light reaching the enlarging bench or easel, but in such a manner that the actinometer can be readily watched by the worker from within the room. To use this arrangement, a fresh piece of paper is brought under the opening of the actinometer, and, the sliding door of the small aperture being drawn up, the time taken by the paper to match the full tint is carefully noted. We will suppose this to be 20 seconds. At or about the same time a test strip of bromide paper is being exposed for the enlargement, and the section which gives the best result on development is, let us say, that which has received an exposure of 30 seconds. When we come to exposing the actual enlargement, the light has perhaps changed, but by making a fresh actinometer test, simultaneously with starting the exposure for the enlargement, no difficulty will be found in allowing for this. The actinometer this time, for instance, takes 40 seconds to reach the full tint. A simple proportion sum, therefore, gives us

$$20 : 40 : : 30 : 60 = 1 \text{ minute}$$

as the correct exposure now necessary. It is much more convenient if the enlarging objective is fitted with a pneumatic shutter and bulb, since the bulb can then be held in the hand while watching the actinometer, and the exposure given simultaneously or instantly after. When the light is dull, the quarter-tint may be used instead of the full tint, making the necessary allowance in calculating.—*British Journal of Photography.*

A Frame of Bolting Silk or Chiffon

It is a well-known fact that for enlargements by artificial light the best results are obtained when using a negative that is full of detail, not contrasty, and preferably on the thin side. Sometimes, however, one gets a negative a trifle on the hard side, which, when enlarged, would give a contrasty print; the use of silk or chiffon interposed between lens and paper would lower the contrasts and give a much softer result.

In my own case (writes C. E. L. in *The Amateur Photographer*), I procured two pieces of strawboard, size 12 by 10 inches, and also one piece of cream chiffon, size 10½ by 8½ inches. Then from the centre of both pieces of board I cut out an opening 9 by 7 inches. One of these boards was then well gummed, and the chiffon tightly stretched across the opening, the gum holding it in position. The other piece of board was also gummed and placed exactly over the first, the gummed sides of course being placed together. This gave me a strong frame with chiffon across the opening, which at any time can be interposed between lens and paper.

Persulphate for Stains

When a negative has a bad yellow stain (says *Photography*) such as is sometimes left after the use of a developer containing hydroquinone, it may be worth while to try the effect of a 2 per cent. solution of ammonium persulphate, as advised by Professor Namias. In an acid condition this would reduce the image, but by adding two drops of ammonia to each ounce of the solution this is prevented, while the power of persulphate upon the stains *is not affected.*

Enclosed Arcs and Bluish Originals

In making negatives of bluish wash-drawings with the enclosed arc-lamps it is often found that the reproduction is very flat as compared with the original. This is probably due to the fact that the light blues reflect nearly as much ultra-violet as the whites, and the result is a loss of tone. The exposures with this kind of original are usually so short that it is no great sacrifice to cut some of the ultra-violet.

A filter should be used of quinine sulphate, 1 part; water, 100 parts—solution being effected by the addition of a drop or two of sulphuric acid; or a filter of bichromate of potassium, 1 part; water, 10,000 parts, will also cut out the ultra-violet. These solutions are used in a cell of 10 millimeters thickness. If the bichromate filter is made stronger, it begins to cut out the violet and the blue, and exposures become so long as to make the use of wet collodion impracticable. Either of the above weak filters may, however, be used with ordinary wet plates without very seriously prolonging exposure.—*British Journal of Photography.*

Substitutes for Potassium Salts

Among the many effects which the war has exerted upon the supply of materials is the rapid rise in the price of potassium salts. Potassium is one of the most widely distributed elements: but, owing to certain deposits in Germany providing it in a form which can be utilized at a comparatively low cost for extraction, the world has accustomed itself to look to our enemies as the chief source of supply. This is a thing which will automatically right itself; and, even if it did not, it need have no unfavorable effect upon photography.

Sodium and potassium compounds behave in

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such closely similar ways that it matters very little whether we use one or the other in our developers. Sodium carbonate has become to a great extent the standard photographic alkali in this country. Actually, sodium carbonate is not an alkali but a salt: but the carbonic acid enfeebles but does not neutralize the powerful alkalinity of the sodium, and it can therefore be used in place of the alkali, caustic soda, to advantage, since the caustic alkali is, if anything, too vigorous.

There are many developing formulæ, however, which specify potassium carbonate, and in the case of any difficulty in getting supplies, the user may wonder to what extent the one alkali may be replaced by the other.

So far as we are aware there is no developing formula for negatives or prints in which sodium carbonate cannot be used in place of potassium carbonate, not merely with no ill effects, but with no perceptible effect of any kind, provided the corresponding quantity is used. If the formula specifies anhydrous potassium carbonate, we can find the quantity of crystals of sodium carbonate necessary to take its place by multiplying the quantity of potassium carbonate by 286 and dividing by 138. If it is the crystalline form of potassium carbonate, we multiply by 286 and divide by 174.

The time required for development in the two cases may not be the same; this must be ascertained by experiment, but except in that respect there would be no perceptible difference.

These figures may suggest the necessity for greater accuracy in substituting one salt for the other than is actually required. It will be sufficiently near the mark if we take twice as much (by weight, of course) of the sodium carbonate crystals as of the anhydrous potassium carbonate, or one and a half times as much as of the crystalline potassium carbonate.

The case of the carbonates is the one most likely to arise, if the question arises at all, but there may be some few instances in which caustic potash may have been used, and it becomes necessary to replace it by caustic soda. The latter is the more energetic of the two, in the proportion of seven to five, so that to find how much caustic soda to use we have to multiply the quantity of caustic potash prescribed by five and divide by seven.

Other alkalies have been used, some extensively and some only slightly. At one time liquor ammonia was by far the most popular. It is perfectly efficient, but in consequence of the change of strength which its solutions undergo on keeping, a change which varies according to the exposure of the liquid to the air by opening the bottle, it has gone out of use to a great extent. This alteration is not very important when developing by the eye, but it unfits it altogether for time development. Caustic lithia and lithium carbonate have also been suggested, but they seem to possess no advantages to justify employing substances that are more expensive and more difficult to obtain commercially.

The whole tendency of modern progress in the composition of developers has been in the direction of simplicity, and the recognition that it is not by the addition of this or of that, not by the use of some wonderful secret compound, and not by some most careful balancing of one ingredient against another, that we attain success. The governing factor is the light action, and to bring that out fully, without developing where there has been no action, and without staining the film, it is realized today that only three reagents are necessary—the developer, the alkali, and the anti-stain; and that, within very wide limits indeed, it makes little or no difference to the result which of the reagents available we use for these purposes.—*Photography.*

Dollars and Sense

"My business is particularly easy to advertise," remarked a commercial photographer recently, "because the mere mailing of a sample of my work tells the whole story. Can you take good photographs? is the one question which occurs to a prospective customer, and the inclosure answers the question.

"Architects and realty men are particularly good subjects for my efforts. Because I seek to make my photographs genuine works of art, rather than bald reproductions of the scene pictured, I have no trouble in holding customers.

"When commissioned to photograph a house, for example, I select a time of day in which the lights and shadows will prove most effective and carefully compose the picture with a view to the creation of a really artistic production.

"Most of my architectural clients were gained from a photograph mailed to a local list some years ago. A picture of a beautiful residence, taken with a soft-focus lens, and showing beautiful cloud effects and in effective dapple light and shade handling on the lawn aroused the recipient's enthusiasm.

"'That's the kind of picture that would make a hit with a prospective patron,' reflected the architect. 'I'll have this man photograph some of MY successes under equally favorable conditions.'

"Auto men, machinery manufacturers, livestock men, house furnishers, decorators, promoters—all these offer an opportunity for the commercial photographer's art.

"Much of my advertising is creative, that is, I often mail a sample photograph to a man who has never used photography, accompanied by a letter suggesting the value of this medium. And this has paid me well.

"A great deal of my business comes from advertising agencies and printers with whom I have established commission connections. But all my competitors use this method. It is from the business which I gain independently that I derive the most profit."—H. J. Barrett, in *New York Evening World.*

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PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Focussing device. Clark and Arrufat. 1174014.
Stand. C. E. Akeley. 1173401.
Shutter. J. J. Quinn. 1173861.
Slide carrier. D. A. Ritchie. 1173740.
M. P. developing machine. J. E. Thornton. 1173898-9.
Color photograph. F. E. Ives. 1173429.
M. P. device. J. B. Parker. 1173212.
M. P. shutter. W. E. Carleton. 1173706.
Making motion pictures. T. H. Hunter. 1173521.
Film camera. A. H. Moses, Jr. 1174266.
Film feed mechanism. A. F. Gall. 1174249.
Film reverser. A. F. Hetherington. 1174499.
Color filter. W. Frey. 1174930.
Printing frame. F. B. Young. 1174790.
Mask. H. J. Vetter. 1174914.
M. P. color film. A. Hernandez-Mejia. 1174144.
M. P. machine. P. J. Walsh. 1174208.
M. P. machine. J. Darby. 1174480.
M. P. projector. J. Darby. 1174479.
Shutter lock. R. and R. G. Holt. 1175632.
Time shutter. H. Zellers. 1175398.
Film length indicator. J. T. Wells. 1175852.
Film mender. H. Hirsch. 1175449.
M. P. illusion. C. R. Macauley. 1175281.
M. P. magazine. J. T. Wells. 1175-851.
M. P. phototelegraphy. A. S. Larsen. 1175313.
Photomechanical screen. J. A. H. Hatt. 1175445.
Phototelegraphy. E. Belin. 1175685.
Focussing device. F. M. Needham. 1176379.
M. P. color shutter. W. H. Kunz. 1175961.
Mechanical etcher. G. H. Benedict. 1176024.
Exposure meter. C. J. Curtis. 1176349.
Film cleaner. J. J. Ormsby. 1176483.
Film projector. Ricker and Bassett. 1176691.
Shutter. E. E. Underwood. 1176329.
Flicker photometer. E. F. Kingsbury. 1176466.
Projection apparatus. H. N. Ott. 1176485.
Reflex camera. E. Goold. 1177243.
M. P. film feed. C. E. Akeley. 1177163-5.
Developing machine. Roth and Keller. 1177539
Photograph holder. A. Cutler. 1177233.
M. P. projector. E. Rector. 1177137.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

of THE PHOTOGRAPH JOURNAL OF AMERICA, published Monthly at New York, N. Y., for April 1, 1916, State of New York, County of New York,

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Thomas C. Watkins, who, having been duly sworn according to law, deposes and says that he is the Editor of the PHOTOGRAPHIC JOURNAL OF AMERICA, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher: Edward L. Wilson, Co., Inc., 122 East 25th Street, New York City.
Editor: Thomas Coke Watkins, 122 East 25th Street, New York City.
Managing Editor: None.
Business Managers: Thomas Coke Watkins and Edwin S. Brown, 122 East 25th Street, New York City.

2. That the owners are:
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3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: none.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is correct.

(This information is required from daily publications only.)

THOMAS C. WATKINS,
Editor.

Sworn to and subscribed before me this 23d day of March, 1916.

CATHARINE C. BLAIR.
(My commission expires March 30, 1916.

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By HOLLINGER
NEW YORK

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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII JUNE, 1916 NUMBER 6

PHOTOGRAPHIC PORTRAITURE AS AN ART[1]

By J. C. STRAUSS

AS I understand it, the purpose and scope of portrait photography as an art is to approach nearer and nearer the work of recognized masters in portraiture. The worker with a camera, however, is at a personal disadvantage, as compared with the painter, by reason of the fact that the latter is, to a greater or less degree, acquainted with his subject, and there is ample opportunity, while sittings are in progress, for friendly, unrestrained companionship. Through this intimacy of association the artist acquires a fair knowledge of the mental make-up and characteristic traits of his sitter, and is thus enabled to put the latter's individuality on the canvas.

On the other hand, the photographer, even one of the better class, in most instances, has probably never before met his patron, and to that extent is handicapped in his endeavors to put character and soul into his portrait.

With the photographer the sitting lasts only a portion of an hour, and a part of this time is, of necessity, devoted to arranging of apparatus. If the rapidity with which a sitter can be disposed of—rushed into the "operating" room, put into "poses", asked to "look pleasant," and excused from further attention by a vociferous "next!"—if this method of rapid handling of subjects were the one employed by all photographers, their process of portraiture would never advance beyond the purely mechanical.

Portraiture by photography is now claiming recognition as an art, because a few of those in the craft have had the courage to say:

"I will not permit my name to go on factory work. I will not allow myself

[1] This timely paper on portraiture by J. C. Strauss, published some years ago in the "Art Review," is so full of meaty ideas that we republish it for the benefit of our new readers.

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to be transformed into a machine in which rapidity of action is the only consideration. I will aim to obtain results which will command approval from those who are competent to judge artistic productions. If, in order to accomplish this purpose, I must limit my daily sittings to three instead of thirty, this shall be done. I must have time to give each subject proper attention. I want my work to bring out the individuality of the sitter. There must be soul, as well as features, in the face."

In order that the principles underlying artistic portraiture may have opportunity for expression by photographic methods, it has become essential for a man who endeavors to create productions having art merit, and who strives for quality rather than quantity, to devote more time to each subject. By this I do not mean to say that the actual time employed in making of negatives should necessarily be increased but that the time devoted by the photographer to becoming acquainted with his patron should be greater. The purpose of this is obvious; it allows an opportunity for learning the salient points of character and utilizing this knowledge toward obtaining a portrait not only good as to feature-likeness, but strikingly natural in portrayal of characteristics.

It must be admitted that photographers are largely to blame for the small demand for artistic merit in their productions. For years they have taught the public that the correct thing in portraits was a white, shining face, without a trace of the bone formation. The most important employe of the "gallery" was the "retoucher," who, without any correct knowledge of the anatomy of the "human form divine," chiselled the negative until the resulting photograph portrayed a being out of all resemblance to the "image of his maker."

The boon companion of the retoucher who produced smooth faces was the artist who believed that the face should be as white as the collar, shirt front, or protruding corner of handkerchief.

The photo-factor knew all about chemical effects in his print, which made the stitches in the button-hole of a man's coat "to part and stand out like quills upon the fretful porcupine."

It is difficult in a year or two to offset the effect upon the public of the practices of a couple of decades. It will probably take some time yet until patrons unlearn the teachings that photographs white in color and defrauded of character by excessive retouching,with prominence of detail, are not only untrue in fact, but wholly lacking in art qualities.

Among those who strive for the higher qualities in camera portraiture the retoucher's importance has vanished, and his work has been made secondary. It takes many years of life to produce the lines of character in the human face, and these should not be eliminated to suit the whims of a barbarian whose ideal is the face of a chinaware doll.

Comparative color-values is a subject of much thought and conscientious study. A mere contrast of harsh lights and shadows is meaningless, and no more resembles the living subject than do the crude drawings of the aborigines. An exaggerated regard for details in the unessentials of a picture will be replaced by proper suggestion, in accord with nature. To sum up: A portrait by photography, just as one in oil, should have feeling and warmth and character. And in the last year there has been a great advance, a wonderful progress toward the truthfully artistic and artistically truthful in photographic portraiture. The work now being done by those few photographers who realize the errors of the past, as compared with that of a few years ago, shows the same degree of improvement that there was from the tintype to the photograph of recent times.

That this forward movement will continue is guaranteed by both the works and the faith of the recognized leaders in our craft.

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DEVELOPING PAPER PRINTS UNDER PRESENT CONDITIONS

By G. WATMAUGH WEBSTER, F.C.S.

I DO not think that I should go far astray if I asserted that previous to the outbreak of the terrible war that is devastating the European Continent, one-half the photographers in the world made use of what is popularly known as the M. Q. developer for paper prints. Everyone knows that metol was almost if not quite entirely the product of German laboratories, and equally so that its output is now virtually extinguished. Hence attention is given to other developers, some of which it is true have long been in use in some establishments, almost to the exclusion of M. Q. The present seems an opportune time to review the pros and cons regarding these other developers.

An important point to consider is the fact that sepia-toned prints are at present very popular, and the question arises: "How do the developers stand with regard to the various conversion processes?" Here I must be content to give my own personal experience, which in one respect is most perplexing. Here in England, at any rate, we can no longer buy the paper or card we have so long been accustomed to. I believe the whole of the paper and card we have for years employed came from the European Continent; but it could not now be purchased in quantity for its weight in gold. The substitute in England is British made. The first batches sent out left much to be desired, but improvements followed. Even yet, however, there is a great difference. The paper itself may be good, though not nearly so tough, but then there is the facing; and I am told that difficulties arise in getting sufficiently pure chemicals for the purpose. Of course the coating with the sensitive film is still done here, but has to be modified to suit the new raw base, so that much previous experience has to be thrown overboard. I do not know the extent to which American-made paper is available, but I have a shrewd suspicion that European paper has been a main source of supply. Hence everyone has to begin again, as it were, in present-day development trials. Now as to M. Q., it presents advantages that none of the others possess. Probably the finest sepia tones are got on Cyko paper developed by its aid, and toned after washing by hot, crude sulphide of potassium ("liver of sulphur") with a little ammonia solution added. With amidol as a developor the tones produced under varying conditions were simply detestable, and if I did not wish to deplete my quickly disappearing stock of metol I had to have recourse to the conversion process—ferricyanide and bromide, the result being very good, but not quite equal to the sulphide tones. These remarks apply only to this well-known American paper, the hot sulphide solution not being available for ordinary papers.

Ferrous-oxalate developer, which, in the very early days of bromide paper was the only available developer, has utterly failed in my hands to give prints that could be toned to a decent sepia, so that it is crossed out of my list of developers for sepia prints. For the rest amidol or diamidophenol (if the latter is purchaseable) give good sepia results by the conversion.

Here I should interpose the remark that owing to the high present price of the bromides many substitutes have been recommended, but so far I have found none to equal it. The much-lauded bichromate of potassium and hydrochloric acid as a whitening solution has not been successful in my hands, at least with the papers we now have to purchase.

Returning now to a consideration of developers for ordinary black prints it is desirable to survey them from a pecuniary point, which, especially in the case of low-priced work—publication post-

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card pictures, and so forth—has assumed very important proportions. We have hydrokinone (only about 10 per cent. cheaper than amidol), and a host of other variants in name of the latter and diamidophenol. By the by, what a large number of people mispronounce this word by laying the accent on "doph" as a separate syllable, each dealer having a pet name of his own.

Hydrokinone alone gives good prints; but with too cold a tone; it also needs more bromide than amidol. I have obtained the best results with 5 minims of a 25 per cent. solution to each grain of hydrokinone, while amidol gives excellent results with only 1 minim or less. At present prices, that means almost doubling the cost of the hydrokinone. Further, the latter, weight for weight, did not seem to develop as many prints as amidol. These calculations must be looked upon as rough estimates as, so far, I have not made exact experiments, though eventually it will be desirable to do so.

Ferrous oxalate claims attention next, and much has been written about it of late, but really it is quite out of the running on the score of expense alone. The quantity of developer that could be made by using half a pound of neutral oxalate of potassium could be compounded by one dram of amidol, which remembering the continual rise in price of potash salts would cost a very much smaller sum (the cost of the sulphite of soda used with the latter being virtually a negligible sum.

I now come to what I look upon as the most promising developer of all, for paper—pyrogallic acid, which, up to the present time, I have not seen recommended at all. Yet the experiments I have recently made with it give me cause to think it may supplant all the others. Many years ago there was put upon the market a salt and a solution termed "Pinatol" recommended for use with pyro for developing paper. I tried a small sample, but though the results were satisfactory, I put it aside and forgot it. I do not like fancy, non-descriptive names. I like to know what I am using. I believe, however, that the pinatol solution was amido-acetate of soda dissolved in water. After numerous inquiries I find this salt is now unobtainable.

After a number of preliminary tentative trials I made some very promising experiments as follows: I took the ordinary pyro developer for plates (about 3 grains of pyro to the ounce and the usual carbonate and sulphite of soda). I added to it ordinary acetate of soda equal in weight to the pyro present, and proceeded to develop. The action was slower, but the prints were excellent, both in quality and color, and the whites were pure. I intend to persevere in its use to find the best for portion and strength. I can only say that so far I am highly pleased with it. No trace of that objectionable blue tone, which the public are beginning to object to, and a considerable power of getting more or less contrast or softness. Of course there are drawbacks. Thus we have the rapid discoloration we are all familiar with when developing plates; it certainly will not keep in good condition for very long, but it may arrive at a fairly deep color before it begins to discolor the whites of the prints, and as it is always at hand there need be no excessive quantity mixed, but only just as much as needed.

Finally, I may say, I have not yet given it a fair trial for sepia effects, but I expect good things of it in that direction also. As a last word I may point out that pyro is only about half the price of amidol!

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INCREASING SALES THROUGH THE QUALITY IDEA

By ROBERT F. SALADÉ

THERE comes on special occasions to practically every normal individual a desire to have "the best kind of a portrait taken." This desire usually comes at a time when a person possesses a little extra, financially, which stimulates an appetite for things luxurious. Under such circumstances the average human does not start out in quest of the most inexpensive photographer in town. Rather, the intention is to seek a portrait artist who has earned a reputation for fine-quality work. On such occasions, low prices make no appeal, and "bargains" are left out of the question. The sentiment is similar to when a couple is to be married: "For once, at least, we will have engraved stationery, and—photographs of the highest grade!"

Here is where the photographer who has won some recognition as a master of his art, and who is doing the right kind of advertising, secures the business.

A glance at the famous Gutekunst windows on Arch Street, Philadelphia, psychologically demonstrates the quality idea in photography. In these windows are displayed in a simple manner striking portraitures of many of the greatest men and women of the world. It is a notable art gallery, free for all passers to enjoy, and each day thousands of people take advantage of the opportunity.

The Gutekunst windows are "dressed" in such plain, dignified style that a quality atmosphere is permanently secured. One comprehends at a glance that only the finest work can be procured at the Gutekunst studios. No marked-down price tags are on any of the pictures in these windows; there are no fancy "trimmings" or extraneous "decorations" to distract the eye from the exhibition. The appearance of many of the photographs, however, is enhanced through their artistic mountings, and all are arranged with exceedingly good taste.

Now, of course, all photographers cannot dress windows or cases with portraits of renowned personages such as those in the Gutekunst "open galleries." All can, however, exhibit the best specimens of their work in such a manner that quality is suggested instead of low prices. Practically every photographer who operates a studio has made portraits of men and women well known in his city, neighborhood, or locality—physicians, lawyers, clergymen, writers, popular business folk, etc. These are the kind of prints to "dress" a window or case with, rather than with a lot of pretty girls' profiles, which in many cases suggest "nobody home," although these are very good, of course, to fill in with. Doctor So-and-so's enlarged photograph in the window, for example, will attract more attention and more favorable comment from people who are personally acquainted with the physician than a hundred portraits of ordinary citizens, and what will make a still stronger appeal are child studies, which every photographer possesses a number of.

The photographer should exhibit in his show-cases and display windows only the highest quality of mountings, for these reflect the character of his work. It is surprising how much new business can be won through showing the latest in slip-ins, folders, panel mounts, bevel-edged mounts, etc., to the general public, and when these mountings are augmented by fine photography, it forms the best kind of "punch" advertising which publicity experts claim should "first attract attention, then create desire, and then effect a sale."

The writer when on a recent business trip through several of the Eastern States, in certain cities noticed many photographers' windows and entry-way cases which were very shabbily dressed. Although the photographs in several

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instances were of first-grade workmanship, the mountings used were of a common variety, and the specimens were arranged in a slap-dash manner. Simply by using better-grade mountings and exhibiting the prints in a more thoughtful way, these photographers could secure greater compensation for their work.

Special notice was taken of one window in Brooklyn, however, where the photographer had studied all of these details, and it was a pleasure for one to look over the contents of that window. This photographer, the writer discovered later, is using the street cars and elevated trains to advertise his service to good advantage. Attractive car cards is the medium, and one contains a large half-tone made from a fine portrait, accompanied by a few words of good copy somewhat like this:

"Many a loved one has departed from this life without leaving relatives and friends a single photograph.

"Attend to this duty to-day—Call at the X—Studios for a Quality Portrait—one that will last for many years."

It would seem that only one thing is wrong with this car card. It shows the picture of a beautiful young woman instead of the portrait of a sweet-faced lady with the legend, "Mother," underneath. A sentimental child study, in this case, would also have more human interest than the half-tone of the young woman.

Returning to the subject of window dressing, wouldn't a large, well-studied portrait of "Mother" in the window speak a special message to practically every person who stops to look?

And, if a photographer would like to have a unique subject for his window at times, why not take a night view of the city's "white way" for example? Or photographs of some of the public buildings, churches, schools, institutions, banks of beautiful architecture, etc. These illustrations in a window create a quality atmosphere, and copies could readily be sold to people who have a special interest in the buildings, to newspapers for publicity purposes, and for display advertising.

Low price has lost its power as a selling force. The average person in these days is looking for the best rather than for the cheapest, and photographers who are more than ordinarily successful are increasing sales through the quality idea.

ART AND THE DAILY LIFE OF MAN

By WILLIAM MORRIS

IF you accept art, it must be a part of your daily lives and the daily life of every man. It will be with us wherever we go; in the ancient city full of traditions of past time; in the newly cleared farm in America or the colonies, where no man has dwelt for traditions to gather round him; in the quiet countryside as in the busy town no place shall be without it; you will have it with you in your sorrow as in your joy; in your work-a-day hours as in your leisure; it will be no respecter of persons, but be shared by gentle and simple, learned and unlearned, and be as a language that all can understand; it will not hinder any work that is necessary to the life of man at the best, but it will destroy all degrading toil, all enervating luxury, all foppish frivolity; it will be the deadly foe of ignorance, dishonesty, and tyranny, and will foster good-will, fair dealing, and confidence between man and man; it will teach you to respect the highest intellect with a manly reverence, but not to despise any man who does not pretend to be what he is not.

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NEAR-PROFESSIONAL PHOTOGRAPHY FOR WOMEN

By GRACE C. RUTTER

SINCE amateur photography became possible, several years ago, and later improvements in cameras and equipment have made the fad widely popular, many women have progressed beyond the "push-the-button" stage and become semi-professionals. Where they have felt sufficient interest to inquire into the processes behind the scenes, women have shown themselves peculiarly gifted for this work.

In towns large enough to support him is found the professional photographer in his skylighted apartments. Obviously, his prices must be sufficient to cover his heavy expenses—rent, help, and first-class materials—and leave a profit worthy his skill. But there are many country villages and rural communities where the unprofessional photographer—often a woman—could find pleasant employment for her spare time, and at a third of his prices make herself a satisfactory profit.

From an experience of six years, the writer knows whereof she writes. Beginning to "take pictures" for a pastime with a dinky little "two-by-twice" film-lined box, she has advanced, through the stages of snapping everything in sight and wasting films and paper by the dozens, to an occasional request to "take my baby's picture" and the order for a dozen, when the fond mother had scolded and cajoled the unhappy subject into a presentable pose, to the questionable fame of "general photographer" for a radius of twelve miles in a farming section of New Jersey, with telephone and mail orders for her services. All the time learning newer and better methods from perusals of the photo magazines, and adding bit by bit equipment of time-saving devices from the profits. It is work which has grown more dear as its possibilities broadened. Never has the income been sufficient for a family, for I have not allowed the work to take time from my household and social duties; nevertheless, it has added many a dollar to my purse and paid well in coin of other realms than finance, and to one who wished to devote their whole time to semi-professional photography in the country, I believe it would give a satisfactory livelihood.

One should have an acquaintance with a camera or be familiar with the subject before attempting to take pictures for the sole purpose of money-making. A subscription for a photo magazine should be the first step. There are several published monthly and semi-monthly, with the needs of the beginner especially in view. These contain expositions in untechnical language covering the difficulties which the average beginner is likely to encounter. Many of them also conduct departments where personal answers are given to queries asked by subscribers in perplexity. Herein, too, are the advertisements of dealers in photographic goods which are seldom seen in other columns.

Without knowing the prospective buyer or the locality of his future business it is hard to give advice on the choice of an outfit. As much money as one can afford should be put into it. An anastigmat lens is always the best, but not necessary to good pictures. Much of my best work was done with a commonplace rectilinear, and I look back upon it gratefully—it was a stepping stone to my present anastigmat-equipped outfit and helped make it possible. By economizing on other helps you may be able to save enough for an anastigmat. Assuming that one wants as complete an outfit as possible, at the lowest price consistent with good quality, the best place to seek these combinations is at a photographic exchange. In many instances the exchanged goods appear as new—when carefully used by a former owner—and the writer knows that often cameras are

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sold as second-hand which have never been used. A whim or perhaps an accident or a death is responsible for the sale before the goods were ever used, and because the dealer buys from a private party and not from another dealer he calls them second-hand. Prices here are from one-quarter to one-half less than for new goods.

At an exchange, twenty-five dollars will cover a five by seven outfit, including developing tank, background, printing frames, ruby lamp, plate-holders, and enough material for making several dozen pictures—with a rectilinear lens. A post-card size outfit could be figured for about two-thirds this amount.

The camera should be either a view or a folding one, using plates. Both these types contain a reversible back, rack and pinion focus movement, rising and falling front, leather bellows, and perhaps a few other less important details. The lens determines the price of the camera; the price of the anastigmats is prohibitive to most people at first; the rapid rectilinear is cheap and will fill the beginner's needs; one can always increase the efficiency of one's outfit as the profits from the business allow.

The five by seven size will be found the best paying, so many varieties of pictures are made with it—large mounted views of groups, scenery, motoring, prize stock, houses and complete farm panoramas, besides portraits of many sizes down to post-card pictures. The mounted views especially sell at a good profit, and the country people like to get them for framing.

A beginner should buy the ready prepared developer and fixing powders; after becoming fairly efficient in exposing and developing, they will find it cheaper to buy the chemicals in bulk and weigh out and made up their own solutions, but if both are tried at first it may prove very discouraging. Being one's own chemist calls for a scale, and "weighing out" is quite fascinating to many; also watching the beautiful tints which are brought out as certain chemicals are dissolved in water. My table often rivals a painter's palette, and I like to think that, although I can not paint with a brush, I can portray artistic views by the aid of these varihued fluids.

Two articles many beginners think unnecessary are the thermometer and a background. Both *are* necessary. Dispense with trays and borrow the dishpan if you cannot afford the needfuls, but by all means buy a thermometer and a background. The thermometer tells you with certainty when you have reached the proper temperature for successful developing, and you cannot afford to guess at this fact, for on it depends your picture. No clambering vine, bush or tree will give the near-professional appearance to a portrait that a canvas background will, although any of the former can be utilized in preference to the side of a house or a fence. Where one can afford to have only one background, a clouded effect is preferable to a scenic, as one will not tire of it so soon and its effect can be changed by using either side up. They can be bought stretched on light frames or attached to rollers, and I prefer the latter shape as it can be rolled on its hanger and occupies little space when not in use. To use, it is hung against the wall.

A closet can be used as a dark-room at first, or a corner of the basement partitioned off and shelves built. A supply of tap water is very handy, but pump and arm power is better than no water for washing. Try to always use rain-water for mixing solutions. Use plenty of water to keep tanks, trays, etc., immaculate, and never use another solution in the same tray without thorough washing. Photographic dirt is, alas! too often invisible, but none the less dangerous.

This is no space for detailed instructions to evolve practical photographers from aspiring amateurs. Experience is often expensive but really the only thing that is convincing, and careful attention to the rules accompanying plates and papers, and the constant reading of the photographic magazines will surely produce pleasing results in the form of progression in your photographic education.

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COMMERCIAL PHOTOGRAPHY

By EDWARD J. DAVISON

THERE is very little real information to be obtained from either books or magazines on this important branch of photography. It has so many different phases and branches. Every photographer has struggled with some of its many problems and did not have time to make a note of his method for the benefit of the craft.

The following useful pointers from the pen of Edward J. Davison, of Kansas City, should prove helpful to many. Mr. Davison is an expert worker and writes whereof he knows.—Ed. P. J. of A.

Photographing Bottles

When photographing bottles and small articles, where it is desired to have a perfectly white ground, and where it is difficult to block out the background, an excellent way is to use a ground-glass for the background and get the light through it from a window at the back. Where a window cannot be used I arrange a mirror to reflect light upon the ground-glass.

The uprights supporting the ground-glass must be free and clear between and have nothing to obstruct the light coming through the ground-glass. Sometimes a background of white cardboard can be lighted from above, but the other is such a simple plan that I would advise its use. Where the oval or round surfaces of the bottles act as mirrors and reflect the angle bars of the skylight, a screen of tracing cloth should be placed between the camera and the skylight to cut off these marks. This precaution is necessary in a great variety of work in order to avoid harsh high-lights and images reflected into the articles themselves if they are polished. Do not try to do away with every high-light, however, for that would leave a flat-looking print.

Chinaware: Bric-a-brac

In making photographs of chinaware, bric-a-brac and similar small articles for commercial purposes, it is necessary to preserve the design, form and details of the originals. I know of nothing which will accomplish this so well as an arrangement of movable shelves lined and edged with black velvet, on which the articles are arranged so as to show their valuable points. The illumination should be secured by light coming through tracing cloth. This will kill reflections and soften or obliterate shadows.

Among the most difficult lines brought to the studio of the commercial worker, that requiring the largest amount of skill and patience, is decorated china having a polished and oval surface. One must use an orthochromatic plate, of course, and sometimes a color screen. About the only light that can be used is a side or top light, or both, coming through tracing cloth. This will diffuse the light and prevent a patch of high-light often right in the decoration. A streak of high-light on the edge and handle of a cup and saucer is an advantage. This style of lighting will show a roundness and softness not obtainable in any other manner. If one is not familiar with the correct position for such articles, it is best to consult some catalogue and find the standard method of presentation or display before attempting; and I would like to emphasize the necessity for sticking to standard positions with almost everything the commercial photographer gets in his shop. There is a right and wrong position for everything, and much time will be saved if the photographer finds out beforehand just what that is. For instance, a cup and saucer must show the back as well as front edge at the top, so that it must be tilted a little toward the camera, or the camera look down on it and the swingback used to keep the perpendicular lines rectilinear. A long-focus lens and long-bellows camera are necessary for this work.

Silverware: Cut-glass

Where much silver or glassware is to be handled a stand with movable shelves is a necessity, and the shelves should be

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held on pins so that they can be placed at different distances apart. For cut-glass, the finest light is a strong top light. This will give brilliance to the facets and liven up what would otherwise be dull. In some factories the pieces are dipped in whiting tinted a light gray before photographing. These shelves will do for silverware, which should be photographed before receiving its polish; but this can seldom be done away from the factory. A good method for dulling bright spots is to rub the place with beeswax and then polish with the hand. This is a simple remedy and can be done easily and quickly with a little practice.

When flat surfaces have inscriptions that do not show, it is a good plan to rub into the engraving a black powder which jewelers use in their work. It will usually stick sufficiently well not to need anything mixed with it. When prints are to be made from negatives of colored subjects and the darker colors are too thin in the negative, those parts of the negative can be tinted with blue aniline, but it is very skilful work. The color is, of course, applied on the glass side. This dodge is old to most portrait workers and enters largely into the retouching of commercial negatives of solid articles such as metal ornaments and the like.

Legal Work

This is a most unsatisfactory class of work, for several reasons. One never knows when he will be called upon to go into court to testify, nor how much time will be consumed, so it is difficult to fix on a price that will justify. I have made a great many negatives for this class of work. A correct record should be kept of each exposure, showing the position of the camera, the exact locality of the place, if outdoors, and the direction in which the lens was pointing. These details should be lettered in the negative thus: "Looking N.E. at S.W. corner Sixth and Locust Streets, K. C., Mo. Camera located fifty feet from lamp-post on S.W. corner (or, at S.W. corner). Taken January 15, 1903, by ——." Do not make a print from any legal negative until such data is shown, so as not to burden your mind with remembering these circumstances; lawyers will usually accept such wording and waive a personal appearance in court. It is well not to remember anything except what the negatives show; it will save embarrassment in cross-questioning. Records of these exposures in legal work should be kept in a separate book for easy reference. Charge double the usual prices for this class of work as compared with ordinary negatives. If allowed witness fees, it usually takes more time to collect them than they are worth, so that it is unwise to figure on anything except the price of the negatives and so many prints. One set of prints should have muslin back and top for insertion in the "pleadings."

Copying Documents

Another class of work requiring great skill is the photographing of indistinct and illegible documents. I recall a case of this sort which took me several hundred miles from home, and the work consisted in photographing two pages of a letter-press copy-book. The copies were in very faint blue typewriter ink on manila-colored tissue. The work had to be done in the private chambers of the judge before whom the case had come, and I had to make use of what I could in the way of a copying rack. I bought a number of rubber bands and a sheet of white cardboard and put the white card under the leaf, leaving the back of the impression outward as the ink was plainer there than where it came through the paper. The rubber bands were used to hold the page flat and in contact with the cardboard. I set the book up by a window, used a color screen and orthochromatic plates to hold the blue ink, and made my exposures. These gave me reversed negatives, of course. When I arrived home 18 x 22 bromide enlargements made from the glass side of the original negative, gave me a correct transcript in the print. With this bromide, the negative set in a window and a strong reading glass I deciphered each letter and, as I was certain of it, traced it in its proper place on the enlargement. In two or three days' time I had the

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document correctly figured out so that it could be plainly read. This is expert work and should command a high price.

Furniture

I have done so much work in this specialty and have become so accustomed to working in all kinds of light that wherever possible I prefer to work at the factory. If I have several windows to work by, I put tissue paper over them and work with the light directly behind me. The walls and ceiling should be white. Work well back into the room and the light will be more even. Use orthochromatic plates and give full exposures, even to the point of overtiming. The lens for this work should not be less than 14 inches focus for plates 8 x 10. The camera should be fixed to look downward on the furniture so as to give the back edge of seats and couches. Furniture is usually photographed in the "rough," or before it is polished. Generally the firm will have a catalogue to guide you in size and position.

If one is careful in placing the background and works well away from windows, properly prepared, he will seldom have to do any blocking out. Where this is necessary the opaque made by Alvord is extremely useful. It is fine-grained, very soluble, and can be used in a pen for writing on glass or paper and for lettering on the film side of a negative. Use a small butter-plate, into which put some of the opaque from the pot, adding water enough to thin it as thin as will cover. This opaque dries quickly and will never "pull" when going over it a second time. Where fine angles and small parts have to be blocked out, a fine-pointed, soft, steel pen can be used perfectly, putting the opaque on the pen with the brush. If you are working on films and wish to number them, you can do so on the celluloid side, and this is an advantage where one is not an adept at lettering backwards. One way is as easy to me as another. Never use India ink in blocking out, as it will crack when it is dry. It is not necessary to block out the entire negative, as yellow or red cover paper can be cut out and pasted on the negative to cover the parts left from the opaquing. Some photographers make an untoned print, carefully cut around the object, and fit this on the negative, but it does not equal the other method. To keep your opaque from spreading on the negative and getting on the figure, use a lead-pencil, going around the subject; this gives a surface which will repel the opaque. Straight lines can be done with a pen and ruler.

THE reckless man only looks to the present. He does not think of his family, his opportunities, and his future.

A HARSH word often means discouragement, while a kind word is often a promise of success.

BELIEVE that the world owes you a *living*, but work for it.

ONLY a fool praises his own efforts.

A WISE man knows his limitations *better than* all others.

HOWEVER simple a piece of work is, it may be made beautiful.

THE man of genius smiles at difficulties because he is determined to conquer them.

NOBODY fears hard work except the laggard.

OUR possibilities are often much greater than our efforts.

CREATE, but always for a wise purpose.

BELIEVE that you have some special work and then set about to accomplish it.

WORK would be stupid and commonplace if it were always easy and successful.

HOWEVER much you do, remember there is more to accomplish.

THE successful business man plans intelligently and works carefully.

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1. By H. Ziesemer
2. By E. Bieber
3. By E. Bieber
4. By A. Pieperhoff

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ON THE USE OF FURNITURE IN PORTRAITURE

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

SINCE the introduction of home portraiture by professionals and travelling photographers there has been quite an innovation in the use of furniture. Nearly everything is found available now, in strange contrast to former decades, when curtains, a few chairs, a papier-maché balustrade, an artificial pot of flowers, a column pedestal, and a table were considered sufficient for all purposes.

I believe the old timers acted very wisely in limiting themselves in that way. There is really nothing gained by a profuse application of furniture and the depiction of entire interiors. Every common-sense photographer will agree with me that portraits like Fig. 10 are not desirable. It is pushing the importance of surroundings and background entirely too far. The only trouble with the old-fashioned studio furniture was that it was in most cases so pretentious and at the same time so hopelessly awkward and ugly. There was not the slightest suggestion of beauty and sanity in it. It was artificial to the extreme. And it is entirely due to home portraiture (starting with the amateur and pictorialist) that the professionals have broken away from the old conventions and slowly begin to equip their studios like some tasteful interior or drawing room. The furniture looks more natural and helps to suggests space and atmosphere in the picture.

But unless you make a specialty of home portraiture, I am sure you will find that the excessive use of furniture in the composition of portraits is a hindrance rather than an aid. The less you make use of furniture the better you and your pictures will fare.

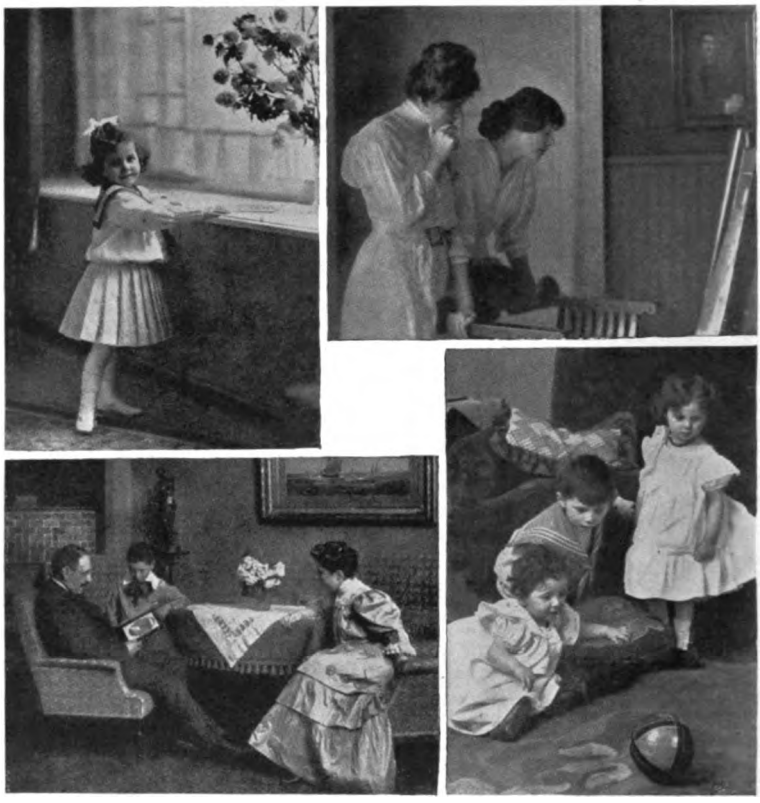
Of course, any amount of good portraits have been made in which pieces of furniture play a conspicuous part. Look, for instance, at Figs. 1 and 2. Fig. 1 in particular is excellent. It is lighted in a way that the upper part of the figure furnishes the principal attraction. Everything else is subordinated to it. There is nothing obtrusive about the numerous vertical and horizontal lines of the picture frames and writing table; a clever management of dark planes brings everything into harmony. The only improvement I could suggest would be to modify the white spot under the chair and the shimmer of light on the lady's dress under the table. Fig. 2 suggests a large, spacious room, but that is about all that has been gained by taking the interior. A plain background would have served the purpose just as well. The light on the lady's dress is so very strong that it seems forced, and there is no home atmosphere about the picture.

Quite an elaborate attempt is shown in Fig. 6. It does not look quite as natural and homelike as Fig. 1, but the armchairs, table, oil painting, and fireplace have been used to good advantage. The figures and objects are well spaced. Notice in particular what an important part the triangular plays in the composition.

Home portraiture like Fig. 8 is always pleasing. Children look most natural in their home surroundings, and should only be taken when they are at perfect ease. Miss Mathilde Weil, of Philadelphia, has done some remarkable work on that line, and shown us what can be done artistically with a nursery or parlor floor. Also Fig. 5 is a good composition, although it might have been improved by bringing the child, curtain, and flowers a trifle closer together and making a narrower panel out of it. A window sill furnishes an excellent accessory to the posing of figures. It is full of contrast, generally simple in line, and offers excellent opportunities for strong as well as subdued lighting.

A half-open door with the glimpse of an interior (Fig. 11) also affords excellent opportunities for pictorial treatment. It depends all on the

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5. By E. BIEBER
6. By R. DÜHRKOOP
7. By B. GUNTHER
8. By R. DÜHRKOOP

character of the figure and how it is posed.

An easel with a painting, or similar objects at which persons look, as in Fig. 7, is less favorable. The portrait changes into a story-telling picture, and, strange to say, the more artistic the treatment is the less of a portrait it will be.

Of the larger pieces of furniture, few are so often introduced as the piano. It is a rather cumbersome affair. It is too unwieldy in form, unless you indulge in clever space composition. In ordinary portraits it should be rather suggested than seen. It is too obtrusive in Fig. 4. Fig. 3 (a portrait of the Swedish composer Edward Grieg), where it is merely indicated in the background, is much better. This rule applies nearly to all furniture. Even a chair, the one piece of furniture absolutely necessary to portraiture, is rarely so beautiful in form that it improves the picture if entirely shown.

The chairs in Figs. 2 and 4 are rather handsome specimens, and yet it were better if they were not so plainly seen. The lines should have been broken somehow by drapery or cut into by the edge of the picture, as in Figs. 1 and 8. This is also well carried out in Fig. 13. A sofa should only be shown in perspective or in part, for the shape of all this kind of furniture is too symmetrical to look well in ordinary portraits.

It would take exceedingly clever composition and treatment to render the full view of a settee, sofa, or lounge attractive. Somehow the pose of the figure had to subdue the severity of lines and masses.

Fig. 10 is an imitation of Whistler's "Mother," and in my opinion a very

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9. By ANON
10. By L. HELD
11. By A. GOTTHEIL
12. By R. DÜHRKOOP
13. By W. ZEIR
14. By H. ERFURTH

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bad one. The photographer has followed the painter closely in every particular, and yet accomplished nothing resembling the spirit of the original. Whistler's painting, besides being a tone arrangement in black and grays, is largely dependent on line and space composition. The lines in the background, in the curtain and pictures, and the differentiation of values in the wall paper were specially invented for the figure. They had to correspond with the lines of the silhouette. It cannot be repeated with another figure. Another figure needs another arrangement. This is a young woman in an empire gown; the other was an old woman in severe black garb. Both need their own treatment, and it depends entirely on feeling, on an inborn good taste that cannot be explained. The borrowed paraphernalia does not help the young lady in Fig. 9 a bit. Without the curtain and swan picture, cut so that it would make an upright instead of an oblong, it would be a much better picture.

In photography the representation of one picture in another should be scrupulously avoided. It easily becomes too conspicuous in all its various details, and looks absurd as in Fig. 12. Fig. 9 is bad enough in that respect. It should be merely a blurred effect, as in Fig. 1.

A profusion of bric a brac, as depicted in Fig. 12, is also not to be recommended. The photographer probably wished to show that his sitter was an art patron. The little statuette alone, which the sitter holds in his hand, would have indicated that in a far more impressive way than all the other stuff littered across the table. For a still-life representation it is not clear enough, and for the intended purpose it is unnecessary.

And to avoid the unnecessary should be the maxim of all photographers. What is the use of bothering with all sorts of cumbersome objects that do not enhance the picture? Do you not think that the lady in Fig. 14 could look just as well without the chair, or the child (Fig. 13) could have been taken just as interestingly without the sofa? And the same question could be asked about nearly all the pictures except Figs. 1, 6, 8, and 11. Of course, it lends variety to your pictures. I perfectly agree with you there. But there is no use in making special efforts to obtain indifferent results. Only use furniture when it is really necessary for your portrait, or when you have thought out some scheme of composition in which it will produce a startling result.

BUSINESS PHILOSOPHY

JUST pick out the high lights of the business. The low ones are seldom seen.

LEAVE something for the imagination —something which a further examination will reveal.

MANY a man's best friends are those who know him least.

TO build up a reputation takes time and care and lots of work and patience. To pull it down it only takes one single policy of folly, as selling the poorest article obtainable at as high a price as possible.

BEAR one fact in mind, that the first impressions are the most lasting, and if you give a man a good impression of your place when he enters you have accomplished half the battle of separating him from his money. A quick walk forward, a pleasant greeting and close attention are not hard things to give, and they will make sales where a glum, dyspeptic countenance with mouth drooping at the corners and a general look of having eaten something that did not agree with you will put a customer in an antagonistic mood that will mean a hard fight to win his confidence and his trade. Look into this in your place of business. It will be worth your while.

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By A. KRAUTH, FRANKFORT, GERMANY
By R. FENDIUS, MAGDEBURG, GERMANY

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By CHAS. C. KOUGH
GREENSBURG, PA.

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By WM. GILL
COLCHESTER, ENGLAND

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PRODUCING EDUCATIONAL FILMS FOR SCHOOL USE

By ERNEST A. DENCH

NEVER was the outlook more promising for the motion-picture photographer who contemplates specializing in the production of educational films for school use. The demand for same from schools and colleges continues to increase, yet the regular producers continue to regard the regular educationals which are shown at the photoplay theatre as being good enough for school purposes. Their pictures are just "fillers"; the subject is skimmed on the surface so as to interest the casual observer, who naturally requires education treated in a popular manner.

The sub-titles which are employed to explain difficult points are often not comprehensive enough for the average scholar to understand same. Then, again, romance often obtrudes in a straight educational in order to introduce the eternal love interest.

School films must also be several times longer than their present lengths if a subject is to be covered in detail. There should likewise be a system. The present plan of covering the life of Abraham Lincoln in one picture and Napoleon in the next must be abolished in favor of some system which conforms with the schedule of the school authorities.

Now for the subjects which lend themselves to pictorial treatment.

The average city dweller's child has a very vague idea of the beauties of the countryside, and some parents are not well off enough to send their offspring to the green meadows, hills, and woody dells.

These are practically like foreign lands to them, but just present these things in motion and a youngster will grasp every little point so readily that it proves as good as visiting the actual place. You might go further and present the haunts, habits and peculiarities of wild animals and birds.

An English teacher friend of mine recently told me a story anent a pupil who had seen a film covering England's largest county.

"I always thought that Yorkshire was a red piece of land," the boy remarked. "Why?" asked his teacher," "Because it is shown in red on the map."

Facts such as an island is a stretch of land divided by water could be put over. And what price foreign lands? The motion picture here can afford a comprehensive idea as to what the different races are like, how they live, towns, industries and so forth. To quote from a letter received from a girl of fourteen: "Motion pictures are better to the school children than geography books because it is easy for them to understand and they can see the places described."

Characters step out of history books by the film, but in producing same it is essential to keep strictly to facts, which is only possible by taking the exterior scenes in the places described, poring over reference books and obtaining true prototypes of the personages.

We will now take arithmetic. On the magic white screen could appear a blank blackboard, on which jump a bunch of jumbled figures. These would form themselves up into sums and the numbers added, subtracted, multiplied or divided, as the case might be.

I know of a cinematographer who engaged a troupe of child players and had them dress and act as teddy bears. Their actions, assisted by oranges, enabled many arithmetical problems to be solved in a simple and pleasing manner.

Another camera man proposes to show the figure one to be followed by another figure one, who fights his brother to the death, the result dissolving into the figure two. This performance may be continued up to any desired number.

All the foregoing suggestions, of course, are only suitable for kindergarten classes.

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Spelling is a good film subject. Suppose a troupe of acrobats were introduced in a scene and each member twisted his body in such a way as to form a certain letter of the alphabet. If these performers lined up in a row they could spell words. This idea has already been carried out by one manufacturer, but there is room for improvement.

Another way would be to show the common version of a misspelt word, which immediately fades into the correct spelling.

Handwriting is easily taught by the film. Sometimes a close-up view of an actor reveals him actually writing a letter. Take the Kalem trademark as another instance. Right across the film each letter is formed with a large, bold, invisible hand.

Mr. Palmer, the author of the *Palmer Method*, intends adapting his system to motion pictures, and he has already had a film, three hundred feet in length, produced. In this picture he writes "West Des Moines High School" correctly on the blackboard, and the points accentuated are these: The right writing posture both teacher and pupil should assume; the difference between writing comfortably on blackboard, wall and desk. Incidentally, the minor details, such as holding the pen, pencil or chalk, are not neglected.

The advantage of the motion-picture plan is that the teacher's hand, which has been filmed close to the camera, is seen with equal clearness by every scholar.

If you can persuade an educational authority to assist you in the production end, such coöperation should not be let slip by, as success is only certain when you get the viewpoint of the other side.

THE VEST-POCKET CAMERA

By HERBERT J. SMITH

DURING the last few years the little vest-pocket camera has come largely into favor and seems to have found a permanent place among the vast assortment of apparatus now on the market. This is not surprising, for many of these tiny cameras are beautifully made, and in competent hands will take pictures which, when enlarged to about half-plate size, can scarcely be distinguished from contact prints.

I do not recommend such small cameras for beginners because they present several difficulties which are not so troublesome when larger instruments are employed. It is far more difficult to arrange the picture with a small camera. Whether the view-finder or focusing screen be used, the image is too small to show what it will look like in the finished photograph. I have found the focusing screen of little use, as it is almost impossible to tell whether the image is perfectly sharp on such a small scale, and a little error in focusing becomes very apparent on enlargement. Another reason why beginners should hesitate to adopt vest-pocket cameras is that the little photographs are not of much use until they are enlarged, and enlarging requires good negatives and a certain amount of skill.

For those who have passed the beginners' stage, however, the vest-pocket camera offers many attractions. It is light and easy to carry about, the plates are inexpensive, and only successful negatives need be kept for finishing.

The cost of the better class vest-pocket cameras is rather high. My own cost more than double the price of many half-plate outfits, but unless a really good lens is used the enlargements suffer; and it would be a mistake to spoil results by economizing on the camera.

These vest-pocket cameras will never

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take the place of the larger ones but they are a valuable addition to the usual half-plate size. On many occasions when a cumbersome instrument has to be left at home ideal pictures present themselves. I can recall many opportunities of which my little camera has enabled me to take advantage.

It is particularly useful for taking street-scenes, as, owing to its short focus lens, objects both near and distant are in sharp focus at the same time even when the open aperture is being used.

How to finish the photographs is, of course, a matter for each individul worker to decide. Some may be content with contact prints, and these answer well enough if only mementoes of scenes and places are required; if real pictures are aimed at, enlarging becomes essential. Those of my negatives that I consider worth printing I enlarge to about 6 x 4 inches. I occasionally enlarge one to a larger size, but as I only print parts of the negatives, as a rule, I find 6 x 4 large enough, especially as, with my half-plate oil lantern, a greater degree of enlargement requires an inconveniently long exposure.

To save time I generally enlarge two photographs together in a carrier made to just hold two vest-pocket negatives. The selection of negatives of equal density enables me to work successfully. I usually enlarge on rough cream bromide and afterward tone to a sepia. I find this process suits most of my photographs and it is easy to spot out blemishes on this paper. I mount my prints on suitable tints of mounting-paper, pasting them along the top edge only, and keep them together in portfolios holding about sixty prints each.

There is one caution I should like to give with regard to the metal dark-slides used with vest-pocket cameras. I have found, by experience, that my slides have a harmful effect on plates left in them for a few weeks. I had left plates in my half-plate wooden slides through the winter and had found them as good as ever, so that I did not, at first, take any special precautions with my metal ones. However, after getting several apparently fogged negatives, I developed an unexposed plate which had been in the metal dark-slide for a few weeks and this showed considerable fog. I then realized that photographs, which might have won me many prizes, had been lost through my having left the plates for too long in the metal dark-slides.—*Photographic Scraps.*

SOME MATTERS CONCERNING LENS APERTURES

LENSES of the same effective aperture, or with stops that have the same *f*/ number, are very commonly considered to be of the same rapidity and to require the same exposure. The optical principles upon which this idea is founded are, however, only applicable when the lenses are used on very distant objects, and do not apply exactly to the case of near objects, such as those dealt with in the studio, or in indoor photography generally. To deal with the latter cases we have to consider not the ordinary *f*/ number of the stop, which is the figure obtained by dividing the diameter of the effective aperture into the focal length, but the number representing what is called the working aperture of the lens; that is, the number obtained by dividing the diameter of the effective aperture into the camera extension, measured from the plate or focussing-screen to the lens node. This, apparently, involves some complex measurements or calculations, but the matter is really fairly simple if we know the scale of reduction upon which we are working. Suppose we are working to scale of, say, one-sixth, with an aperture of the nominal value of *f*/8, then the working aperture number is 8 plus $\frac{8}{6}$ or 9.33. The rule is: Multiply

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the *f*/ number by the ratio of image to object (that is the scale of reduction), and then add the result to the *f*/ number. The scale of reduction can always be determined very approximately in the studio by simply measuring the height of a figure or head on the ground glass, therefore the variation of the working aperture is easily arrived at with very approximate accuracy. The same thing applies in copying work, in which, as a few examples will show, the variation of aperture is of much greater importance.

The rule shows at a glance that when copying full size the aperture number is doubled, so that a stop of, say, *f*/16 is really equivalent to one of *f*/32, which requires four times the exposure. Compare this with the conditions in studio portraiture. Assume that an eight-inch lens with stop *f*/4.5 is used on a sitter twelve feet away. The scale of reduction is then 1/17 and the working aperture number becomes 4.76 instead of 4.5, which is a negligible difference. If we reduce the distance to six feet the scale is reduced to one-eighth and the working aperture number to 5.06, which involves an increase of only one-seventh in the exposure. Practically, then, we can neglect the variation of the aperture number when using an eight-inch lens and stop *f*/4.5 in ordinary studio conditions.

Next consider the case of a twelve-inch lens also at *f*/4.5. At a distance of twelve feet this gives a reduction of one-eleventh, and at six feet one of one-fifth. The relative aperture numbers are then 4.9 and 5.4, and the larger number requires an increase of only one-fifth in the exposure, which is again an almost negligible quantity. As such a lens is not likely to be used at such a short distance on account of the lack of depth, we may again assume that the variation of the aperture number is of small importance with large stops. With small stops as, for example, with an *f*/8 stop, a twelve-inch lens at twelve feet is working at *f*/8.75 and at six feet at *f*/9.6. The increased exposure being again only one-fifth, it is evident that the difference is still on the negligible side. With a shorter-focus lens it is of still less importance, hence we may conclude generally that the variation in the aperture number that occurs in studio work with different distances of subjects is practically negligible; while lenses of differing focal lengths, but with stop of the same nominal *f*/ value, may be considered of equal speed.

If, then, we find different lenses requiring appreciably different exposures though working at the same nominal apertures, we may conclude that the difference is due to something other than variation of working aperture due to nearness of object in the studio. Lenses do vary in this way, and there is no doubt that the variation is due to their different construction—the varying thickness of glass, to varying absorbing qualities of the glass, and to varying numbers of reflecting surfaces. Also, if it is found that a reduction of distance, from, say, twelve feet to six feet, requires an appreciably longer exposure, this also must be put down to something other than mere variation of aperture number. One possible cause of variation in exposure is the condition of the atmosphere in the studio. It should be remembered that in some conditions the atmosphere is a visible and luminous though transparent body to the photographic plate. If there is a considerable depth of it, its luminosity must be added to that of the object being photographed. In landscape work this is the reason of very distant views requiring extra short exposures to avoid an appearance of over-exposure. In the open air a great depth of atmosphere is required to produce this effect, and in a confined enclosed studio lack of depth may be made up for by greater density, or mistiness in certain conditions.

Speaking generally we may then conclude that in ordinary studio work variation of the aperture number is a negligible matter, though in copying work which has to be done at much closer quarters it is by no means a matter to be ignored.

Another point in regard to aperture not generally understood is the difference between effective aperture and angular aperture. The effective aperture of a lens may be defined as the diameter of a parallel light-pencil entering the lens

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with any particular stop. Dividing this diameter into the focal length we get the *f*/ number. The angular aperture, on the other hand, is a measure of the angle of the emerging light-pencil at its apex or focus, where it meets the plate. This can be expressed also as an *f*/ number by taking twice the cotangent of half the angle, but when expressed in this way the result is not necessarily the same as the number of the effective aperture. In a lens well corrected for spherical aberration the angular aperture will be greater than the effective aperture; thus in an extremely good lens that we recently measured the angular aperture was *f*/7.2 and the effective aperture *f*/7.5. The difference is, of course, not great, and never can be very great, but it is important from two points of view. The first of these is that the effective aperture governs matters connected with exposure, while the angular aperture governs depth and all matters relating thereto. Lenses of the same effective aperture may, therefore, differ as regards the depth they give because their angular apertures differ. The second point is, perhaps, even less generally understood. It is this, while English opticians usually mark their lenses with their effective apertures, Continental opticians very often, if not always, mark theirs with the angular aperture. This is the reason why the R.P.S. suggestions for the measurement and marking of stops with their effective apertures are so derided by eminent Continental opticians (German ones in particular), and it is also the reason why some of the latter persons are (sometimes) wrongly credited or discredited with overstating the rapidity of their lenses.—*British Journal of Photography.*

WHY A SLACK SEASON?

WHY there should be a slack season in professional photography nobody knows, but it is certain that the idea of this recurrent period of stagnation has taken firm hold of a large number of photographers, who wait, grumbling but inactive, until the public wakes up and asks again for their services.

It is absurd, of course, to expect no ups and downs in the takings, but it is obvious that the closer the limits of the fluctuation the sounder the basis on which the business is conducted. These undulations, however, are not under discussion. It is the almost complete cessation of work at certain times that needs attention, because although so many accept this suspension of orders as inevitable, there is little doubt that the excuses for it are generally poor and unworthy of good men.

There are in the photographic profession men who have come into it, not as photographers, but as business men; and it is noteworthy that complaints of bad trade come very seldom from photographers in this class. On the other hand, there are many in the profession who, although photographers first, have the same measure of business ability, and have avoided dropping into the "nothing doing" habit or tradition.

Both classes make a point of understanding the influences which lead people to the studio and those which keep them away. They are not affected for a moment by reasons which will not bear full inquiry and are not supported by sound causes. And in this direction they start well ahead of many excellent professional men who regard this traditional slump as unavoidable, and take no steps to understand and eradicate the cause.

The business man realizes that the expenses of his establishment are going on all the year round, and he is not satisfied to set against present inaction

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BY HOLLINGER, NEW YORK

high-pressure work, with overtime charges, at another time. He knows that the business that pays best is the business that shows, each day and each week, a turnover that meets standing charges and leaves the desired margin of profit.

The "nothing is doing" complaint is not good enough for the photographic profession. Supposing that the natural demand for an article is small at a given season, the business need not be satisfied by that demand. There is a wide margin of spending power on the part of the public, and the most successful undertakings are those which take steps to turn that spending power to their advantage. On every hand instances can be seen of the wisdom of stimulating spending tendencies when, for one reason or another, they are sluggish, and the photographer who neglects to adopt measures of this sort is running considerable risk of forfeiting his claim to rank as a business man.

What are you doing to keep your staff uniformly busy, and to make each week bear its share of your standing expenses and show its contribution to profits?—*Professional Photographer.*

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CHAPTERS ON PORTRAITURE

EXTRACTED FROM THE RARE AND VALUABLE TREATISE ON "PORTRAIT PAINTING," WRITTEN BY JOHN BURNET. PARAPHRASED AND CONDENSED FOR THE GUIDANCE OF ADVANCED WORKERS IN PHOTOGRAPHIC PORTRAITURE BY JOHN A. TENNANT

I

THE leading characteristic of portraiture is certainly the likeness; historical (or idealistic) portraiture should present the general character of the subject, portraiture pure and simple the individual character; but as every subject is personally more or less defective in proportion as he or she departs from the perfect type of the class, so the artist should first perceive where the individual variations of his subject lie, and treat it accordingly; not by obliterating the variations by lighting, posing, or the use of the pencil, but by modifying them, ennobling the character portrayed, and refining the same. The study of perfect types, such as we have in antique statues, will enable him to accomplish this, and the study of the best pictures of great artists in every branch of portraiture will be of great value. To attempt to pursue portraiture unaided by this requisite study would be to go into a foreign land without a chart or guide. Alexander would never sit for his portrait to anyone but the great Appeles, who knew how to ennoble the likeness; while Cromwell desired Sir Peter Lely to portray him as he was, warts and all. Very little experience will convince the portraitist that most of his sitters resemble Alexander rather than the stern protector of England's commonwealth.

II

Sir David Wilkie, in his remarks on portraiture, referring to the modifications of the variations of the subject, says: "In the human head, without attempting to generalize, so far as to make it the beau ideal of the class to which it belongs, there is yet in every head certain untoward shapes, spaces too vacant or too much divided, or certain lines which, for harmonious arrangement, require to be assimilated in their direction, which the experience of the portraitist will at once correct; and this treatment or accommodation is common to all heads, more or less." Sir Thomas Lawrence used to say that even in the majestic head of Mrs. Siddons there were parts and forms which did not appear to belong to Mrs. Siddons, and should, therefore, be omitted in her portrait.

To every head where character as well as resemblance is required, this remark will apply. Not only may accidents be softened down or left out, but a due distinction should be made between what is permanent and fixed, and parts liable to alteration and change. The eyes, the nose, the mouth, require to be given with a force due to their preëminence; while the dimples on the face of youth and the wrinkles on the brow of age should not be given with the force of life, but with such delicacy, as fleeting and evanescent, as Nature requires. This, however, should be done with feeling and discrimination, so that the connecting links in the features on which expression depends, and upon which likeness depends still more, may not be lost. In continuation, Wilkie remarks: "Of all judges, the most difficult to satisfy, and those whose opinion there seems the least reason to doubt or question, are the family and relatives of the person portrayed. They, more than all others, must know the original best; and knowing this, it would seem vain to doubt but that they must distinguish what is like or unlike. It is, indeed, not the knowledge, but the taste of such persons that should make the portraitist hesitate to alter what they say should be altered, and obey their judgment in the matter. The moment the artist, so to speak, gives up his pencil to another, he runs the risk not only of spoiling his work, but of destroying the resemblance."

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III

That likenesses do not depend upon detail may be proved by our instant recognition of any one of our friends, even across the street, where scarcely a feature can be defined. Likeness will be found to lie more in general form and the masses of dark and half-tints; and the eye, taking in the form at a glance, assists the imagination in completing the resemblance. This is one great reason why the portraitist should be careful not to lose the peculiarities of outward form, either in the head or the contour of the figure of the subject. The extreme darks, and their exact distance from each other, are greatly conducive to likeness, as is also the marking of the points where the high-lights fall, particularly on the forehead, nose, and cheek bone. By the presentation of too much detail, or its emphasis, the breadth is destroyed and the portrait loses the life-like and moving character of Nature. In the pictures of Rubens, where the lines and forms flow into each other, being merged broadly instead of closely defined, these qualities are very evident.

IV

It is important to recognize the power of expression to give animation and agreeable character to a likeness, whether it be qualified by manly dignity, childlike grace, or womanly gentleness. Without expression the features, although correctly rendered, will be found lifeless and fixed. This detail, expression—the charm of all true portraiture—can only be caught at the moment when the sitter is off guard, and not fatigued or weary. In women, the seat of sweet, soft, genuine character is in the outer corners of the eyes, especially the lower eyelid, and the corners of the mouth. These points the portraitist should watch during the sitting. Dignity lies in the under-lip and chin, the upper orbit of the eye and forehead; to give the former without a simper, and the latter without a frown, requires the nicest feeling of the artist.

The great qualities of portraiture are found in the pictures of Titian. To every material object, hard or soft, rough or smooth, bright or opaque, obscure or transparent, his pencil imparted its true character and appearance to the eye, with all the force and harmony of light, shade, middle-tint, and reflection, by which he perfectly relieved, rounded, and connected the whole. Here is the ideal to which the portraitist should aspire.

V

The drawing of the figure is also one of the points of importance in portraiture. Michael Angelo said of Titian that had he been a correct designer he would have been the master-painter of the ages. Titian, like his contemporaries, began his career by merely copying Nature as she happened to present herself, without choice or selection, and labored for some time in the labyrinth of littleness; but a hint from Giorgione soon taught him that taste was as requisite as industry, that labor might be misapplied, and truth itself become uninteresting and unnatural; that the detail must be sunk in the essential and predominant characteristics of the subject; and that the art of portraiture consists, not in presenting a feeble catalogue of particulars, but a characteristic, comprehensive, and animated impression of the whole. This extract certainly contains the true philosophy of portraiture, and should be constantly kept in mind; nevertheless, it is indispensable for the artist to go through a certain course of imitation that he may acquire accuracy of eye.

Referring to the portraiture common in his day as it is in ours, Fuseli remarks: "It is the remembrancer of insignificance; mere human resemblance in attitude without action, features without meaning, dress without drapery, and situation without propriety. The aim of the perfunctory portraitist is confined to the *external* likeness, the deeper, nobler aim, the personification of character, being forgotten or neglected in the desire to meet the wishes of the patron."

(*To be continued*)

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THE SHORTAGE IN PHOTOGRAPHIC CHEMICALS

WHY is there such a serious shortage of developing chemicals? Of course, the obvious answer is that the shortage is due to the war, like the shortage of nearly all other materials.

There are two main reasons for the present shortage of materials. Some are short because the supply has diminished, and others because the demand has increased. In the case of many chemicals and most metals the latter is the explanation. The nations at war are using enormous quantities of such metals as steel, copper, and aluminum, and such chemicals as sulphuric and nitric acids, and for that reason the price has risen.

In the case of some other chemicals, and especially those which are known as "organic" chemicals, it is not so much that the demand has gone up but that the supply has been greatly decreased by the isolation of Germany, which was the chief producer of these substances.

Nearly all organic chemicals are made from the oil which forms the lightest portion of coal-tar. When coal is distilled to make gas or to get the coke, there are a great many substances which come off with the gas and which are condensed from it, and among these are the light oils which comprise a large fraction of what is known as coal-tar.

The most volatile of these light oils is the one known as benzol; but in addition to benzol the coal-tar contains toluol, xylol, and other substances, such as carbolic acid and naphthaline, which are closely related to them.

From these coal-tar crude materials, as they are called, the organic chemists build up substances, more or less complex in their nature, which are called "intermediates," and by joining some of these intermediates together they make dyes. In addition to dyes, the organic chemists of Germany have made the photographic developing agents, which are closely allied to the dye intermediates, and have also made a great many pharmaceutical products, some of which are allied to the intermediates, while others are so complex that they are more akin to dyes.

It will easily be realized that the chemists who made the intermediates for dyes had a great advantage in making the photographic developers.

Take hydrochinon, for instance: Hydrochinon is made by oxidizing aniline oil and then reducing the mixture again. Now, in the whole world, perhaps, only about a hundred tons of aniline oil a year are required for making hydrochinon, while a big dye works will want far more than this every day for making dyes, and obviously the aniline can be made more cheaply in the large quantity than in the quantity in which it is wanted for hydrochinon; so that a dye works which could make aniline cheaply had a great advantage in making hydrochinon over anybody who tried to make aniline for the purpose.

As a result of this the people who made photographic developers in this country mostly bought their intermediates from the German dye works; because if one wanted to make hydrochinon it was cheaper to buy the aniline oil from Germany, where it was made in vast quantities, than to make the small quantity required for one's self.

This was the trouble when the war broke out. Not only were the supplies of German developing agents cut off, but the supply of intermediate products from which the American-made developing agents had been made was also cut off.

Metol, elon, etc., are made from paramidophenol, and when war came the firms that had been making these developers could not make them because they had no paraminophenol. Paramidophenol is made from carbolic acid, but not only was there no paramidophenol, there was practically no carbolic acid, and the American manufacturer had no plants to make paramidophenol

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and no plants to separate the carbolic acid from which they could make paramidophenol.

Pyrogallol is made by distilling gallic acid. Gallic acid is made by the fermentation of gall-nuts; gall-nuts are grown only in China and in Asia Minor. Pyrogallol was made in the United States prior to the war, but the gallic acid from which it was distilled was obtained from Germany. So in this case, too, the American manufacturer has been obliged to begin at the beginning in order to secure an adequate supply of the raw materials.

The most strenuous efforts have been made by the leading American firms to secure a supply of developers, but the difficulties have been immense, because it was necessary not only to put up the plants to make the developers, but to put up plants for making the materials from which the developers are made.

In the case of hydrochinon, for instance, aniline, from which it is made, was unobtainable; but it was not sufficient to put up a plant to make aniline, because aniline is obtained from nitro benzol, and it was as impossible to get this as it was to get aniline itself. So that it was necessary to buy benzol, nitrate this to make nitro benzol, and reduce this to aniline, and then when the aniline had been secured, this had to be oxidized and reduced to get the hydrochinon and the product finally purified.

In the case of paramidophenol, the problem was so difficult that some manufacturers have attempted entirely different processes from those usually employed, and instead of proceeding through carbolic acid, have tried to make the developing substance direct from the nitro benzol obtained by treating benzol with nitric and sulphuric acids.

Those responsible for the security of the photographic industry in the United States have not been negligent in their attempts to secure a sufficient supply of developing agents, but the difficulties have been such that only after many months of further work can they see any hope of being able to fully supply the demand by products made in America.

IF you can not plan well you will not build wisely.

REMEMBER that few are born to wear the purple, most men who succeed win out through struggle and disappointment.

A COWARD fears but a brave man fights.

IT is as important that you take stock of your ability and your shortcomings as of your line of goods.

BEFORE you start out on any important undertaking plan it as carefully as an architect would the building of a house or the writer the building of a novel.

EFFORT, like energy, is never wasted; it shows its results somewhere.

IF a man would count his successes by his efforts instead of his rewards how happy he would be.

THE man who is kicking all the time cannot do his best work because he is using the energy that should be put into his work.

IT may be hard not to get what you want today, but console yourself in the thought that you have other days in which to get it.

Do keep on trying, for effort is bound to build a road to success.

Do use every bit of work, however trivial, to make you stronger for big undertakings.

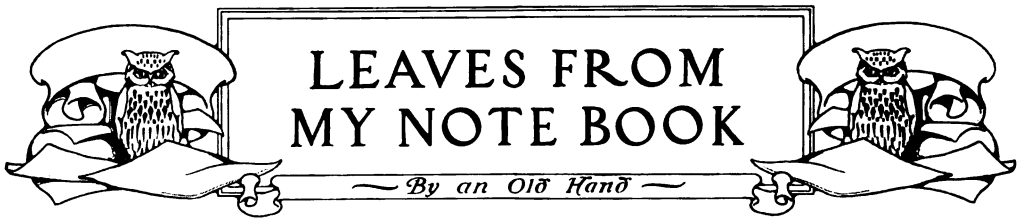
DON'T sing your praises; remember that self praise is no praise.

Do show a disposition to help yourself. Until you do, you cannot expect others to help you.

DON'T be hasty in your undertakings; remember that haste makes waste.

LABOR, not too well, but wisely. There is wisdom in grasping and mastering those things for which we feel best fitted.

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THE CARBON PROCESS

It is an extraordinary thing to me that the carbon process is not more used that it is, for by its aid it is possible to obtain prints in any color, on any surface, nor is it a difficult process.

In the first place, the tissue, as it is called, can be kept in an unsensitized condition for years, and after sensitizing for at least ten days I have used it for special work for some years and have found that for really high-class work it pays to show some specimen carbon prints. The range of colors is unlimited, practically; the results are permanent and possess a brilliancy and clearness in the shadows unsurpassed by any other printing process.

The pigmented paper or tissue can be bought commercially and it does not pay anyone to make it. It should always be bought unsensitized. The operation of sensitizing can be easily done at night and it will be ready for use the next morning. The following is a good formula for the sensitizer:

Potass. bichromate . . .	25 gm.
Citric acid	6 gm.
Ammonia solution about .	17 c.c.
Distilled water to . . .	1000 c.c.

Dissolve the bichromate and acid and add enough ammonia to make the color turn a distinct yellow.

The above strength is suitable for normal negatives. For thin ones the quantity of water may be increased to 2500, and for dense, contrasty negatives it may be reduced to 500 c.c. The stronger the solution of bichromate the more rapid the tissue but the flatter the prints, and the weaker the solution the greater the contrasts.

If ammonium bichromate be employed instead of the potassium salt one-third of the water may be replaced by methyl alcohol and the tissue will dry more rapidly but the sensitizer will not keep so long.

The tissue should be immersed in the solution and allowed to remain till it flattens out, which will take about two minutes in summer and three in winter. The actual time of immersion is, however, immaterial. In no case should the temperature of the solution be above 70° F. When the time is up, draw the tissue over the edge of the tray so as to remove as much adherent solution as possible, and lay face down on a sheet of glass or an old negative; lightly squeegee, then strip and hang up to dry. If sensitized at night, it will be ready for use the next morning, and it can be dried in any ordinary darkroom. The tissue is quite insensitive when wet and artificial light will not hurt it.

Before printing, the negative must be provided with a safe edge; narrow black passepartoute binding, put on the glass side of the negative, is satisfactory. As the image is invisible, an actinometer of some kind must be used, and these are commercial articles and cheap and are used with any printing-out paper, and a negative will require a certain number of tints. Experience alone can teach one just how long to expose the paper, but I have found that for a normal negative in June about fifteen minutes is about right.

The print is developed from the back, and therefore it is laterally reversed, so that one has either to develop on a temporary support and later transfer to its final support, or be satisfied to show the print the wrong way round. Temporary and final supports are commercial goods, obtainable in various colors and surfaces.

The temporary support may be paper or glass or metal, but in all cases it must be waxed and a solution of about quarter of an ounce of yellow beeswax, dissolved in a pint of turpentine should be used and lightly applied to the temporary support twenty-four hours before use, so as to give time for the turps to evaporate. Benzole or ether may be used instead of the turpentine and then only a few hours will be required for these to evaporate.

For development, the temporary support should be soaked in water for half an hour and the exposed tissue immersed in cold water; it will at once curl up, and it should be left till it flattens out and commences to curl the opposite way. Then it should be brought into contact with the temporary support under the surface of the water, and the two well squeegeed and put under a weight for twenty or thirty minutes; they may be left much longer without harm if care is taken to keep them moist, which can be easily done with wet blotting paper.

Water at about 105° F. is used for development, and a plentiful supply of it should be kept handy, as it will soon cool down. The print on its support should be immersed in the hot water and left till some of the pigment is seen oozing out from the edges. Then a corner of the paper may be lifted, and with a gentle even pull the paper can be entirely stripped and thrown away, as it is now of no further use. At this stage no image is visible and the whole thing looks a dirty, slimy mass. It is as well

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to support the print on an old negative glass and dash the warm water over it with the hand when the still soluble gelatin will gradually be washed off and the picture appear. Development may be stopped at any point by merely removing the print and rinsing under the cold-water tap. If it looks too dark and heavy, hotter water may be applied.

When development is complete, rinse the print in cold water and immerse for five minutes in a 5 per cent. solution of alum; then wash for about ten minutes, and it is ready for transfer to its final support. This should have been soaking in cold water during development, and the print should be brought into contact with the prepared surface under water, the two well squeegeed, and then hung up to dry. When thoroughly dry the transfer paper may be easily stripped off. Both temporary and final support should be cut larger than the actual print.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Avoiding Finger Stains

S. Roberts states that if the fingers are wetted first and constantly dipped into clean water, or rinsed under a tap, pyro will not stain the skin or nails. From practical trial it is stated that if this plan is adopted hundreds of plates may be developed with pyro without any stain.—*British Journal of Photography*, 1916, p. 214.

Copying Printed Matter without a Camera

Dr. Blumenthal, of Berlin, has obtained a German patent for obtaining copies of all printed matter without the aid of photography. Paper is impregnated with a solution of one part of oil of aniseed in ninety-nine parts of ether, and the latter allowed to evaporate. The paper is then placed over the printed matter and put into a press for a short time, when the printers' ink will set off onto the paper and a good impression will be obtained. Fixation is effected by placing the paper for five minutes in denatured alcohol. —*D. R. Pat.* 287516.

It is a very old trick to dampen printed matter with a solvent of the ink and then take an impression. Years ago we used blotting-paper and turpentine, and engravings and other matter many years old will thus transfer to another paper.

Radioscopy in the War

The x-rays are being very much used in the European war, and some of the English photographic societies are detailing their members to develop the plates. For certain cases radioscopy is used more than the plate, and Dr. Bergonie, of Paris, states that it has been found that the best results are obtained by illuminating the operating room with an intense red light which must be practically monochromatic or at least it must not pass any yellow. Immediately the tube is excited, the red light is switched out and the pale greenish-yellow image of the radioscopic screen appears much more distinct and clear than when the room is lit by white light; this being caused by the more acute vision due to the eye pupils being enlarged and also partly to contrast. Tincture of iodine, which is so much used as an antiseptic, appears colorless, venous blood shows well, while arterial blood is only faintly tinted. The slightest sign of asphyxia from the anesthetic is at once seen, as the flesh turns nearly black—*Phot. Rev.*, March, 1916.

White Ink

A colorless ink which dries white can be prepared by dissolving zinc oxide in twice its weight of 5 to 20 per cent. ammonia solution.—*Graph. Revue*, 1916, p. 8.

Another Sulphide Modification

H. Fordham recommends bleaching prints in:

Potas. bichromate, 10 per cent. solution	1 oz.
Common salt	1 oz.
Water	10 oz.
Sulphuric acid, strong	¼ oz.

Wash when bleached till the bichromate stain disappears and then redevelop with:

Sodium sulphide	10 gr.
Water	10 oz.
Hydrochloric acid	10 drops

It is stated to give a very fine color without any trace of yellow.—*Phot.*, 1916, p. 272.

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NOTES AND NEWS

A Correction

In our May issue we published, in error, the price of Ansco V. P. Speedex No. 3 with Goerz Celor F. 4.8 at $47.50. This price should have been $55.00, and with Ansco Anastigmat F. 5 $47.50. This, by the way, is one of the best small cameras, for enlargements, on the market. Because of the accuracy of its mechanism, the sharp definition and rapidity of its anastigmat equipment, the pictures made with it enlarge to almost any size.

The Balance of Light and Shade in Portraiture. By Wm. H. Towles. Over 40 illustrations; buckram bound. Price, postpaid, $1.50, obtainable at this office.

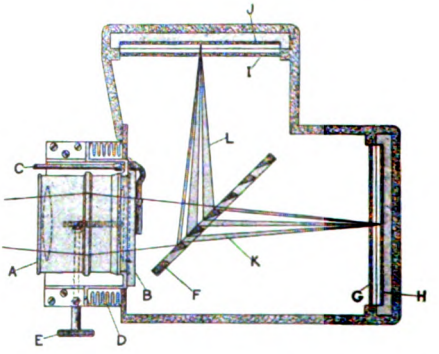
This book is based on the lecture given by Mr. Towles with such success at numerous conventions during the past two years. It is thoroughly illustrated with specimens of Mr. Towles's work and is written in non-technical language. A careful reading is sure to have a beneficial influence on portrait work.

A Double-negative Camera Which Reproduces Images in Natural Colors

Another valuable contribution has been made toward the development of color photography, this time in the form of a camera that exposes two negative plates simultaneously through the agency of a perforated mirror. Thus there are recorded on the two negatives the red color values and the blue-green color values, respectively, of the image photographed. Subsequently, as the various phases of the process are carried out, positive prints in the form of transparencies with images colored red and green, respectively, are cemented together, the two glasses removed, and the picture mounted on paper, canvas, ivory, or any other material that may be selected.

The new camera and process of color photography, says *The Scientific American*, are the result of years of research work and experimenting on the part of Percy D. Brewster of New York City. The point of distinct divergence between the Brewster process and other color-photography processes lies in the method of exposing the two negative plates in the camera. Hence the camera will be considered first.

As will be noted in one of the accompanying views representing a sectional view of the camera, this consists of a light-tight box arranged to hold two plates or negatives, *H*, *J* at right angles to each other. It is provided with a lens, *A*, and a shutter, *B*, of conventional pattern, mounted on a movable front board for focusing as in the ordinary camera. *C* is the bulb tube controlling the shutter, while *D* is the bellows and *E* the focusing screw. Between the lens and the negative, *H*, in a direct line with both, there is interposed a nickel or silver mirror, *F*, mounted at an angle as illustrated. This mirror is protected from oxidation, and



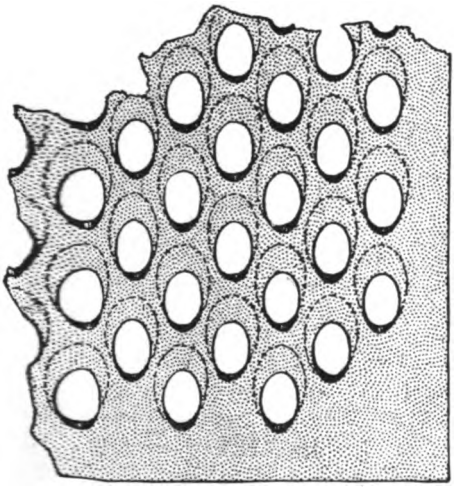
its surface has been ground and polished to an optical flat by a well-known telescope maker. Through the mirror there have been bored some 100 holes, each at an angle of 45 degrees in relation to the surface of the mirror; for this reason the mirror has come to be known colloquially as the "Swiss cheese" plate. It is essential that any light rays that pass through the holes in the mirror should not be interfered with by the metal backing; accordingly, the sides of the holes have been countersunk at an angle of about 40 degrees.

It is an established fact that light radiates from every point in the object to be photographed into the camera lens, and is projected by the lens in the form of a cone upon the sensitive

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plate, the base being at the diaphragm point of the lens and the apex at the plate. If half of these light rays are cut off, the remainder will form just as perfect an image of the point photographed, although, quite obviously, with only half of the light intensity, thereby necessitating doubling the exposure. This fact is taken advantage of in the design of the Brewster camera in breaking up each one of these cones of light into 20 or more parts; that is to say, each cone is made to strike possibly ten holes and so transmit to the back ten beams of light, *K*, which recombine to form the image on the negative plate in line with the lens. Meanwhile the portions of the cone of light which strike the solid parts of the mirror are reflected at right angles, *L*, and these too reunite to form a perfect image on the second plate, *J*.

In the foregoing discussion the path of only one point of light from the image photographed has been traced from its source as a point to its



THE PERFORATED MIRROR OR "SWISS CHEESE" PLATE

expansion as the base of a cone in the lens and its reconversion to a point at the surface of the plate. It must be remembered that a countless number of rays are received by the lens in the making of a photograph and that probably millions of rays pass through each of the holes in the perforated mirror to form the images on the two plates.

It should be explained here that all ordinary photographic plates are color blind, as it were, to everything except blue and violet. They are made color sensitive by treating them with rare dyes, such as pinacyanol and pinachrome, in the weakest sort of solution—one part dye to about one million parts of water, for instance. The first of these dyes makes the plate sensitive to red and orange light rays; the other, to green and blue.

A green filter, *G*, is interposed in front of the direct plate in the color-photography camera, so as to record the object by green light on that plate, while a red filter, *I*, is interposed in front of the plate that is acted upon by the reflected rays or beams of light. Thus it becomes possible to record simultaneously the same object on the two negatives. The exposure in the studio is from two to eight seconds, while in sunlight it is as fast as a fiftieth of a second.

Owing to their sensitiveness to red light, the plates are developed in total darkness. The plates of course appear in black and white; one represents the red record and the other the green record of the object photographed. Both negatives record exactly the same object and register exactly the same size. The point of variation rests in the fact that the red values of the photographed object are recorded with greater density on the red negative while the green values are recorded with greater density on the green negative.

From the two negatives two positive prints in black and white are secured by contact printing in a manner similar to that followed in making a lantern slide. Following, the image on the positive plate printed from the green negative is dyed red, while the positive from the red negative is dyed green. If a little thought is given to the subject it soon becomes apparent why this reversal in the dyeing is necessary.

The new method of coloring the positive plates was discovered by Mr. Hoyt Miller through many researches made for this process. By this treatment the black and white positive is converted into a pure dye image and the opaque black silver eliminated in a few seconds' time. At the same time the transparent portions of the positives, which form the whites in the final picture, are protected from the slightest discoloration. Plates of great luminosity and brilliancy are secured, with the result that when combined they form a sharp and perfectly colored image without the slightest discoloration in the whites.

The two positive plates, perfectly registered and now cemented together to form the complete picture in the form of a transparency, are ready to be transferred from their glass supports to any other form of support that may be selected. This work is accomplished by carefully removing the emulsions from the plates and stripping them onto their final support, which may be paper, canvas, porcelain or ivory, the latter in the case of a miniature.

Specimens of the work produced with the Brewster camera and process are faithful in the reproduction of the image, and the hues found in some of the pictures represent a wide range in the color scale despite the fact that only two of the three primary colors are used. It is the opinion of the inventor of the process that its use is not limited to the taking of photographs; he believes it will eventually find its way into the printing and lithograph trades as a more expedient, less expensive, and a more faithful method of color printing.

RELIABLE CHEMICALS

CHAS. COOPER & CO., of 194 Worth Street, New York, one of the oldest and most reliable chemical houses in the country, issue a monthly

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price-list of chemicals that should find its way into every photographic studio. It will be sent for the asking, and the photographer who watches the prices of chemicals will find that he can save money.

The Clarence H. White School of Photography, East Canaan, Connecticut, July 10 to August 19

The seventh summer session of the Clarence H. White School of Photography will be held at East Canaan, Conn., during July and August, 1916, the growth of the school having necessitated a change from the former location at Seguinland, Maine.

East Canaan is situated in a beautiful valley in the Berkshire hills of Northern Connecticut, and is about four hours' ride by train from New York City.

The seventh session of the school comprises a period of six weeks, opening Monday, July 10 and closing Saturday, August 19. The hours are from nine till one, and from three till nve, though the building is at all times open to the students for free work. The morning hours are devoted to lectures and demonstrations, the afternoons being given to the execution of problems, both artistic and technical.

Applications for accommodations may be made to Mr. White or direct to Miss Clara Z. Bottum, Stevens Farm, East Canaan, Conn.

For reservations or further information, address: Clarence H. White, 230 East 11th Street, New York City.

Our Cover Picture

The attractive print on our cover this month is by the well-known photographer and artist, Frank Scott Clark, of Detroit, Mich.

All Sensitized Material Forbidden

The exportation of all sensitized material has been forbidden from England, though apparently actual manufacturers may obtain special licenses.

The New "Ilex" Catalogue

The Ilex Optical Co., of Rochester, N. Y., have just issued a handsome new catalogue listing the famous Ilex shutters in the latest models. The fundamental feature of the "Ilex" is the use of gears for retarding and controlling the speeds, with the compactness and simplicity of construction of a fine watch.

The auxiliary speed adjuster, which controls the higher speeds, also gives the exact variations. This works independently of the above-mentioned set of gears on the high-grade Ilex shutters; therefore exact speeds and variations are absolutely assured on every indicated speed, under any climatic condition, or in any position of the camera.

In addition to the Ilex shutters listed in this catalogue, with description and prices, are photographs made with Ilex Anastigmat lens working at F. 6.3.

This attractive catalogue contains much useful matter concerning the optical properties of lenses, in addition to detail information on all the Ilex lenses and accessories. When you are in the market for a shutter or a lens it will pay you to investigate the "Ilex."

Japine Silver Paper

This is a new introduction marketed on this side by Willis & Clements, of Philadelphia, and is a special silver printing-out paper for warm brown, sepia, and red tones.

Before use the paper must be exposed to a damp atmosphere so as to allow it to absorb some moisture, and it is recommended to hang it in a box with wet blotting paper for an hour or so. It was found, however, that equally good results were obtainable by suspending overnight in the dark-room over a pan of water. When in the right condition the image appears of a reddish color and not blue. It is a rapid printing paper, possessing a rather longer scale of gradation than ordinary gelatino-chloride printing-out paper, and there is by no means so much loss in toning and fixing, so that the overprinting required is slight. On the other hand, when well overprinted, very rich, warm-brown tones are readily obtained.

After insolation the print should be washed for about ten minutes in several changes of water, then immersed in a weak salt solution and toned with a special salt, and finally fixed in a 10 per cent. solution of hypo, rendered alkaline with ammonia.

The colors obtained are extremely rich, and and the most pleasing sepias are obtained with about fifteen minutes' toning. The surface is vellum-like in texture and quite novel. It is well worth a trial by professionals, while amateurs will find it a pleasing variant from developing papers.

G. Gennert's New Motion-picture Catalogue

A very complete department for the motion-picture trade has been equipped by this well-known and long-established house, and includes a large and varied line of cameras, projectors, etc. The new illustrated catalogue of motion-picture apparatus will be sent on application by G. Gennert, 24 East Thirteenth Street, New York City.

Roosevelt to Judge Photographs

Theodore Roosevelt, Miss Ida Tarbell, and Mark Sullivan will serve as judges in a twenty-six-hundred-dollar cash prize photography contest instituted by the National Highways Association, of which General Coleman du Pont is the head. Each picture must show the most striking good or bad features of some road in the United States.

Over 1,000,000 People Visited the Sprague-Hathaway Exhibit

Most of the photographers of the country know that the Sprague-Hathaway Studios, of West Somerville, Mass., had a large exhibit at the San Francisco Fair, but it will be news to

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many to learn that over 1,000,000 people visited their booth during the exposition.

No effort was made by the company to sell their work direct, but in every case the public was advised that the beautiful paintings and enlargements could be secured through the photographers.

This display has already proved to be a profitable one for the photographers, and results are sure to follow for many years to come.

A New Model Easel

This New Model Easel affords means of handling different sizes of paper for enlarging purposes with the least possible trouble, as the paper is held flat against the glass plate with



a pressure pad, practically in the same manner as when using an ordinary printing frame.

Any sized masks may be used up to full capacity of easel, and the masks are held in position by a spring finger at each corner. As the easel is square the masks may be reversed.

The easel is pivoted between supporting uprights and may be swung into a horizontal position for the purpose of removing or replacing paper. The paper is placed over the opening in mask, face down, and held perfectly flat by the divided back panel of easel.

A locking device on the upright allows the easel to be swung into a vertical position, or tilted several degrees out of a plumb line, in order to correct distortion of vertical lines in architectural subjects, due to lack of the swing-back feature on the camera when the original negative was made. When the easel is swung sufficiently to correct this distortion, it may be locked in position, permitting duplicate enlargements to be made without readjustment of the swing feature, as a spring-actuated bolt holds the easel in either the vertical or slightly tilted position.

The easel is 20″ x 20″, and will take paper 16″ x 20″ or smaller.

Masks are cut 20″ x 20″ outside, with the standard openings, or any special size opening that may be desired.

Height from floor to centre of easel 48″.

Price, New Model Easel complete with sheet of 20″ x 20″ glass, five masks 20″ x 20″ outside, with the following openings: 16 x 20, 14 x 17, 11 x 14, 10 x 12, 8 x 10, $16.00, and is supplied by Folmer & Schwing Division, Eastman Kodak Co., Rochester, New York.



The New Goerz Rotar F:8

In the new Goerz Rotar F:8 it has been the aim to produce a lens of moderate speed which would be suitable for a great variety of photographic requirements. This lens is intended to meet the demand wherever crisp definition over the entire plate is of first consideration and high speed is of secondary importance. The Rotar is a highly corrected Anastigmat lens. It consists of two symmetrical, uncemented combinations. It is free from spherical and chromatic aberration, and has a flat field over the size plate for which it is listed.

It is highly recommended for photo engraving, copying, enlarging and general commercial work. The commercial photographer will find an efficient lens for copying, enlarging, and other professional work where snap and brilliancy are essential. In short, the New Goerz Rotar is a lens of first quality for general photography, where moderate speed is preferred.

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THE WORKROOM

By the Head Operator

METOL AND PARAMIDOPHENOL
GASLIGHT PAPER AND OTHER FACTS
COATING FOR BLUE-PRINT PAPER
AN INTENSIFICATION NOTE
SPEND ONE-HALF MINUTE
FAKED PHOTOGRAPHS: A SIMPLE METHOD
YOUR NEGATIVES
SUMMER DEVELOPER
SUMMER NEGATIVES
REVIVING FADED PRINTS
EVOLUTION OF THE BACKGROUND
PICTURES IN BRONZE
TONING WITH ANILIN COLORS
DETECTING FAKED PHOTOGRAPHS
FOR MASKING SLIDES
SOAPING BROMOIL PRINTS BEFORE INKING UP
INTENSIFYING SELF-TONING P. O P.
DUST
AVOIDING PINS WITH MERCURY INTENSIFIER
RETOUCHING HINTS
MAGNESIUM AND MOISTURE
PREPARING NEGATIVES FOR DRYING
CLEANING-UP PRINTS WITH DIRTY EDGES
NARROW BLACK FRAMES
FIXING BATH STAINS

METOL AND PARAMIDOPHENOL

METOL, unquestionably the most largely used photographic developer from a commercial point of view, is now practically unobtainable and whatever supply may exist at present is worth almost "its weight in gold." It is true that the consumer can almost afford to dispense with it by using pyrogallic acid, which has not suffered as much either in supply or price, but for speed, for instance, the use of metol is surely desirable to say the least. Pyro is far too slow for these days of efficiency, to begin with, then again it does not keep well and stains everything it touches.

The reason for this alarming shortage and excessive price of metol lies simply in the one fact that metol has been *exclusively* "made in Germany," and that the secret of its manufacture has remained in German hands. The scientific literature, so abundant in the case of most other chemical products, is strangely silent in regard to metol; but such as it is, it gives us a fair presentation of the chemical problems and difficulties involved in its manufacture, but we may surely express the hope that American resources and research will rise to the occasion and remove the dependence of American industries upon foreign monoplies.

Metol, rhodol, satrapol, etc., are one and the same thing, and are merely registered tradenames for the chemical known as mono-methyl-para-amidophenol sulphate, which has been placed upon the market by Hauff, of Feuerbach, Germany; The Berlin Anilin Works (Aktien Gesellschaft fuer Anilin Fabrikation, *i. e.*, "Agfa"), Schering and Glatz, etc. The Eastman Kodak Company has also imported the material and placed it on the market under the name of "Elon"; and by Merck & Co., and known as "Photol."

It is a white crystalline powder which is soluble in water; its formula is:

$$(C_6H_4\,OH\,NH\,CH_3)_2\,H_2SO_4$$

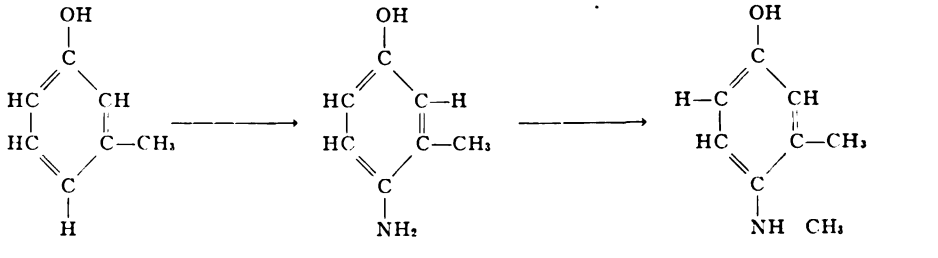
it is also sometimes called methyl-para-amido-meta-cresol and written as

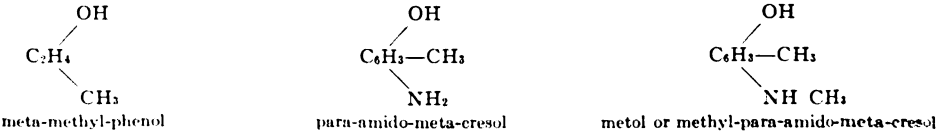
$$(C_6H_3\,(OH)\,(CH_3)\,(N\,H\,CH_3))$$

its structural formula may be written thus:

$$C_6H_4 \begin{matrix} NH\,CH_3 & (1) \\ OH & (4) \end{matrix}$$

The structural formation of metol may be represented as follows:





meta-methyl-phenol — para-amido-meta-cresol — metol or methyl-para-amido-meta-cresol

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Metol has at times been found adulterated with the non-methylated compound of para-amidophenol. Such adulteration may, however, according to A. Nicolle (*Moniteur Scientifique*, 1909, page 173), be detected by chemical analysis. The facts made use of are: 1. That metol dissolves readily and completely in two to three times its weight of hydrochloric acid. 2. That para-amidophenol salts are insoluble therein.

Since metol is a salt of mono-methyl-para-amidophenol it seems only logical to take ordinary para-amidophenol and "methylate" it, *i. e.*, introduce the methyl or CH_3 group by chemical methods. Such a precedure would of course presuppose an available supply of para-amidophenol, which, unfortunately, is quite as scarce as metol. This will, however, be considered later.

Direct methylation of paramidophenol by chemical treatment with methyl compounds is, however, not as readily accomplished as might theoretically appear. Thus, L. Paul, writing in the *Zeitschrift fuer Angewandte Chemie*, 1897, page 171, states that metol cannot be prepared by direct methylation, but that it may be prepared by boiling two molecules of paramidophenol and one molecule of chloracetic acid for an hour in aqueous solution. On cooling, p-hydroxyglycine crystallizes out, which on heating turns brown at 200° C., begins to melt at 220° C. and is completely melted at 245° to 247° C., when it decomposes into carbonic acid and metol according to the equation:

$$1.4\ C_6H_4(OH)\ NH\ CH_2CO_2H = 1.4\ C_6H_4.OH.C.H_2NH_2 + CO_2.$$

The literature of the subject contains sundry other directions for preparing the material, as for instance a German patent granted makes use of hydroquinone as the starting point.

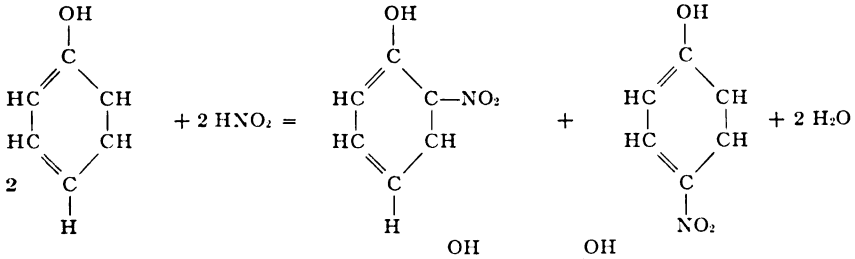
It seems that, although metol has been in use for about twenty years, its commercial process of manufacture has remained a German trade secret, and that no patent has been taken out which upon expiring would be able to create competition in manufacture. If any patent has been issued in Germany it is undoubtedly so well disguised as to be practically unrecognizable upon its face as a direct means for making metol. That is, patents may have been granted for methods of producing and treating various intermediary products which could form the basis for the manufacture of metol itself. A careful and scientific survey of the literature should therefore precede any attempts to manufacture the material.[1]

If it is found that paramidophenol *can* be methylated by some economical direct or indirect method, it is still obvious that metol could not very well be commercially manufactured from any raw material nearly as expensive and scarce as itself. If, therefore, paramidophenol must be used in the production of metol, we must turn our attention to the manufacture of this former material.

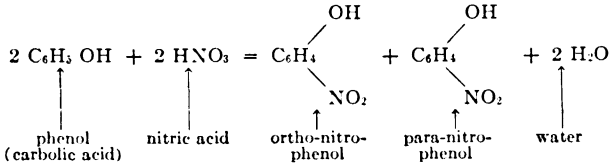
The literature on para-amidophenol is fairly extensive, as it also is on the aminophenols in general. Several methods are given for the preparation of paramidophenol, but in the author's opinion most of these are merely small-scale classical laboratory methods, all undoubtedly capable of producing paramidophenol it is true, but in such small amounts and, owing to the costly materials needed, at such expense that they are precluded from achieving commercial exploitation on a scale commensurate with the demands of the enormous photographic industry. Synthetic rubber, for example, can also be prepared in the laboratory, but just at present it would hardly pay to attempt to use it for automobile tires.

According to the *Chemist-Druggist* of 1914, page 413, para-amidophenol may be prepared by adding 25 parts of para-nitrophenol ($C_6H_4NO_2OH$) to 180 parts of hydrochloric acid (Sp. Gr. 1.162) and 75 parts of tin, contained in an earthenware vessel, the temperature rising to 100° to 106° C. Two hundred parts of concentrated sulphuric acid are then added in a fine stream. After standing for three days the para-amidophenol sulphate is filtered off, drained, dissolved in 200 parts of cold water, and decomposed with soda, sodium bisulphite (1 part) being added to the solution to protect the precipitated base from oxidation. The precipitate is filter-pressed and dissolved in boiling water with sodium bisulphite, the filtered solution on cooling depositing the base in colorless needles.

The transformation from phenol into paramidophenol may be graphically represented as follows:



or



[1] The original German patent 69582 of August 1, 1891, granted to J. Hauff, of Feuerbach, and an additional patent, 71816, of September 25, 1891, contain no information as to the manufacture of metol, but are merely for its use as a developing agent. Both patents have lapsed.—Ed. P. J. of A.

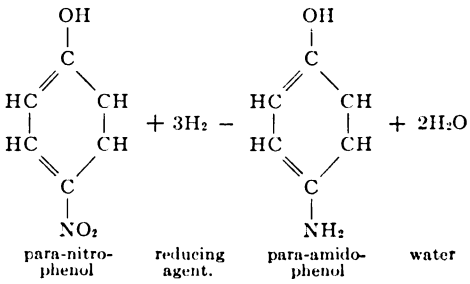
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As stated before, the para-nitro-phenol is separated and treated with a reducing agent (in the above case, tin) and the nitro group (NO_2) is transformed to an amido group (NH_2) and we get para-amido-phenol. Thus:

$$-NO_2 + 3H_2 = -NH_2 + 2H_2O$$

(nitro group) (reducing agent) (amido group) (water)

or



para-nitro-phenol | reducing agent. | para-amido-phenol | water

All of the above raw materials are extremely expensive, take tin for instance, and nitrophenol which is difficult to get and almost as expensive as metol. The inconveniences of manipulation must also be taken into account. Gattermann, an eminent German electro-chemist and several other workers some time ago recommended the experimental preparation of the material by means of the electrolysis of a solution of nitro-benzol $C_6H_5NO_2$ (made by treating benzene with HN_3) in sulphuric acid; the electric current reducing the nitrobenzol to paramidophenol. Several U. S. patents have also been taken out for the electrolytic production of such nitro compounds. It is probable that some such or other method using relatively cheap raw materials and economical large scale cell arrangement and exploited commercially would meet with success. This would of course have to be determined by experience. The questions and problems involved in a task of this kind also would make it worthy to be placed among the research problems of some American university.

Para-amidophenol is a derivative of phenol (C_6H_5OH) commonly known as carbolic acid. The latter in itself possesses no developing power whatsoever, but when the amido group is introduced we obtain either ortho or para-amidophenol as desired which find extensive application in photography.

The para compound is a yellowish or brownish powder melting at 184°, is soluble in water, alcohol, ether and in solutions of sodium and potassium hydroxides (caustic soda and potash). Lumiere has employed caustic lithia and many other non-caustic formulas have been used. Para-amidophenol gives satisfactory results without caustic and the following may be considered typical for this material:

The Lumiere brothers appear to have first investigated the properties of this substance for developing purposes more than twenty-five years ago. Since that time a great many variations in formulæ have appeared and one of the most frequent uses is in conjunction with an alkali hydrate, usually sodium or potassium (*i. e.*, caustic soda or potash) although Lumiere has used caustic lithia. "Rodinal" is a German trade name for a concentrated solution of a paramidophenol salt with a caustic alkali, and placed on the market by the Berlin Anilin Works (Agfa). Paramidophenol is a clean-working developer.

We herewith append the following formula as suggested by the Eastman Kodak Co.:

Water	10 gal.
Metol	180 gms.
Sod. sulphite	3 lb. 5 oz.
Hydroquinone	8 oz.
Sod. carbonate	1 lb. 9 oz.
Pot. bromide	1 oz. 63 gm.
Citric acid	400 gm.
Pot. metabisulphite	2 oz.

Paramidophenol may be used instead of metol. —*Samuel Wein.*

Gaslight Paper and other Facts

According to *Das Atelier des Photographen*, the chlorbrom silver paper, called gaslight paper, stands as you know with respect to its properties between the pure silver-bromide paper and the silver chloride emulsion paper. In the first place, they have the property of furnishing a clear black tone and a fadeless light, in the second place the fine details and the possibility of warmth and strongly warm tones can be furnished by them.

This last property is at the present time of the greatest interest, because gaslight paper appears in this way to be qualified to profitably replace or compensate for smooth celloidin paper with simple platinum toning which supplies the well-known brown-black to brown tones.

It is, however, these so-called platinum tones on development paper which cannot be through any toning experience, because if the tone is of equal degree, you will obtain in this fashion an intense brown which is of course conspicuously different from the desired tone. You are thereby forced in order to get this tone by developing, to carry out procedures that are not as simple as they might be. With familiarity, gaslight papers stand in need of a whole lot of definite prolongation of the time of illumination to develop a black tone. At the same time there must be a corresponding change of the developer.

The relations between the illumination and the developer can be made to suit exactly the usual means, but you must count with the other circumstances that each and every single-developing picture will require fresh developer, because no more of the normal compound remains for the necessary paper. More important than anything is the circumstance that, according to your accustomed method of developing, you are never able to definitely ascertain the end tone, since it changes during the drying. As a rule, therefore, no brown tones, but olives, are commonly obtained, which after washing and completely drying can appear as browns.

While for the production of a black-toned picture on gaslight paper almost all the well-known negative developers will do, yet the nature of the reducing materials for the develop-

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ment of brown tones plays a most important role. This is traced back with special qualities for the silver chloride content of the emulsion or, in the case of a salt sensitive to light, it should be silver chlor-bromide. Hydrochinone, which as is known is most suitable for the production of warm tones with pure silver chloride, has in this way given excellent results with chlorbrom silver. It has found, therefore, an extended application for this purpose. This is of value especially where you wish to give an effect to the gaslight paper for the production of warm brown-black or brown tones. It can be used alone or in combination with metal.

In attempting to get a developer for brown tones that is most certain, there is lately coming again into use a developer that has been much abandoned in recent years, because it furnishes a brown toned picture in definite composition. Since there were no gaslight papers then to any extent in practical use, or anyone to go crazy about brown tones, this developer—pyrokatechin or Burntkatechin—found no practical use. Today, however, it stands in the foreground unchallenged in interest and applications and under all sorts of fancy names as special developers for brown tones it is sold to the trade.

In its normal composition it is related to pyrogallic acid. It possesses, to wit, the energetic OH chemical group in the orthoposition, but you must be acquainted with organic chemistry to understand this. In pyrogallic this group occurs three times, while in hydroquinone this group occurs twice but in the para position. The developing possibility of pyro is great enough to develop a picture even alone with an alkali, without sulphite. If, however, you mix a watery pyrocolechin solution with a potash solution you will obtain them with silver bromide as well as with silver chlor-bromide, clear, delicate pictures in brown colors, which were in 1889 designated by Eder as bron silver pictures.

The energy of such a developer is naturally of the nature of the alkali which is added. If you require a pyro solution of passing strength with a relatively strong potash solution, there will result on the gaslight paper a brown-black tone; if on the other hand you use soda bicarbonate, a clear brown will develop. There is here the conjecture that this brown tone owes its origin to the oxidation products of the developer, because the latter becomes an intense brown during the developing and in a fleeting addition colors itself white. These colors disappear with permanganate and bisulphite treatment.

The colored oxidation products of the developer do not change any further. Therefore it is fairly indifferent whether the brown picture consists of silver only or in part pigment stuff. It is chiefly necessary that only pure water of absolute cleanliness be used in order to get a smooth, even finish, and to obtain the same toning effect upon all the pictures as upon one.

Although the gaslight paper is suited in general for developing with pyro-bronz petechin in German—the picture tones should not only be in more of the developer, but also be independent of the kind of emulsion, since it is treated in a combined tone which owes its origin partly to the reduced silver and partly to the oxidation products.

In the first place it is to be observed that the change of potash turn bicarbonate to the silver toning is important, and the picture will perfectly resemble in its black-brown tone those smooth celloidin paper pictures toned by platinum without gold. Since these tones are much desired at present, this method of developing is of great value. If instead of the bicarbonate of potash you take soda bicarbonate, there results a less energetic developer, and you obtain a picture which contains more oxidation products and thereby the paper appears much browner.

This kind of brown developer from the pyrocatechin solution and the potash or soda mixture, comes under various names in the trade and is exactly determined according to the kind of paper used.

A definite set of directions which has been worked out for "celaton paper" which yields a definite tone with this paper, just as you obtain with many kinds of smooth celloidin paper and simple platinum toning without a gold bath, is indicated by warm black color. This has the following formula:

No. 1

Water	100 c.c.
Pyrocatechin ("Brebzkatechin)	5 gm.

No. 2

Water	100 c.c.
Potash	20 gm.

For use you take 100 parts of water, 4 parts of solution No. 1 and ten parts of solution No. 2.

True enough, the developing is slower than usual, but you get exactly the gradation and strength as with the metol-hydrochinone developer. Then, too, the time of development is sufficiently short to prevent the white coloring of the pictures by the oxidation products of the developer. Nor do you need any clearing bath or any over-developing, because the generally used clearing bath is washed away by the coloring of the oxidation products. Since this property occurs also with sulphite of soda, no acid sodium sulphite must be allowed in the bath, but only a simple fixing solution.

In the developer itself the sodium sulphite is the source of the oxidation products and it also directly prevents the brown tones.

Coating for Blue-print Paper

Economical method of preparing potassium-ferricyanide solution, developed by the department of agriculture, Washington, D. C.

As a result of the great increase in the price of potassium ferricyanide, or red prussiate of potash, which is extensively used as a coating material for blue-print paper, an economical method of preparing the substance has been devised by the Department of Agriculture. Before the beginning of the war, potassium ferricyanide could be obtained for 55 cents a pound. It now sells for about $6 a pound and,

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moreover, it is exceedingly difficult to obtain in this country even at that price. Since blue-print papers in this country are coated almost exclusively with potassium ferricyanide, and all coating, blue-printing, and washing equipment is built for use with this as the coating material, the rise in price has worked quite a hardship upon both the producers and users of blue-print paper.

Potassium ferricyanide is produced by oxidizing a solution of potassium ferrocyanide with chlorine gas. At the same time a small amount of potassium chloride is produced. Investigations by the Bureau of Chemistry show, however, that the presence of this amount of potassium chloride in the coating of the paper does not interfere with the color and durability of the print. It is unnecessary, therefore, to separate the potassium chloride by crystallizing the potassium ferricyanide, provided that the latter is to be used on the spot and soon after it is prepared.

The apparatus devised by the Bureau of Chemistry for preparing in this way potassium ferricyanide solution is simple. The chief precaution to be taken in its operation is to see that the finished solution does not contain an excess of chlorine. At the prevailing prices of the materials, potassium ferricyanide solution can be made by this process at the cost of approximately $2.80 per pound, calculated on the dry salt basis. At the prices which prevailed before the war and which may be regarded as normal, the cost would be approximately 35 cents per pound.

Allowing for possible loss, 100 pounds of potassium ferrocyanide should yield about 75 pounds of potassium ferricyanide. Probably 10 pounds of chlorine would be required also. That is, 1⅓ pounds of potassium ferrocyanide oxidized with approximately ⅛ pound of chloride, would yield 1 pound of potassium ferricyanide.

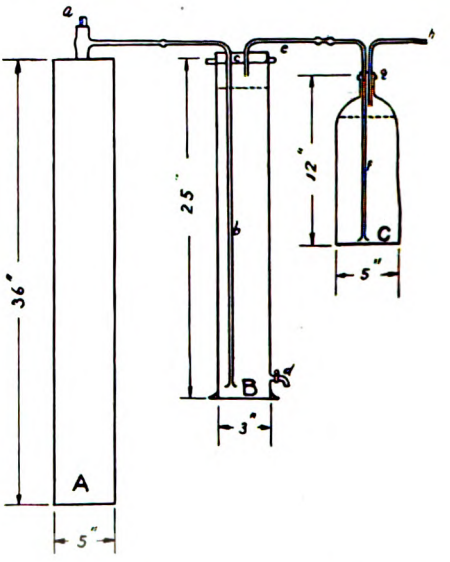
In February potassium ferrocyanide was quoted at $2 per pound and liquid chlorine can be obtained in iron cylinders for 15 cents a pound. At these prices, as has already been said, a pound of potassium ferricyanide in solution can be made for approximately $2.80 per pound, whereas it is now quoted on the market at $6 a pound.

This saving is, of course, much greater than under normal conditions, when technical potassium ferrocyanide can be obtained for 25 cents per pound and technical potassium ferricyanide for 55 cents per pound. The price of the potassium ferricyanide at all times will be greater than the price of potassium ferrocyanide, since the former is prepared by oxidizing the latter with chlorine, followed by repeated crystallizations to separate the potassium chloride formed at the same time. It seems probable, therefore, that even under normal conditions the simple procedure devised by the Department of Agriculture for the preparation of potassium ferricyanide solution will prove profitable for users of large quantities of blue prints.

The necessary apparatus has been developed primarily for use in the government service, but it is equally available for other purposes. The method and apparatus for making potassium ferricyanide are described as follows:

METHOD AND APPARATUS

Apparatus.—This apparatus is designed to produce one pound of potassium ferricyanide from 1.33 pounds of potassium ferrocyanide. *A* is a cylinder containing chlorine, *B* is a glass cylinder three inches in diameter and twenty-five inches in height, capacity approximately ¾ of a gallon (Eimer & Amend Catalog 2496), in which the solution of potassium ferrocyanide is placed. *C* is an ordinary acid bottle containing a solution of sodium hydroxid for absorbing any excess of chlorine which may be unab-



sorbed by the solution of potassium ferrocyanide. The glass cylinder *B* is fitted with a glass petcock (*d*) near the base for withdrawing a portion of the solution for testing completion of oxidation. At the top it is fitted with a three-inch cork (*c*) sealed with paraffin having two holes to accommodate the glass tubes (*b* and *e*). One of these tubes (*b*) extends to the bottom of the cylinder and is blown at the end to well distribute the gas. It is connected by a short piece of rubber tubing to the pipe attached to the chlorine cylinder. The other tube (*e*) which does not touch the surface of the solution in cylinder (*B*) is connected by a rubber tube to a glass tube (*f*) running to the bottom of the acid bottle and blown to distribute any gas which may not be absorbed in *B*. Bottle *C* is fitted at the top with a cork (*g*) sealed with paraffin and having two holes through which pass tubes. One of these tubes (*f*) runs to the bottom of the bottle, the other (*h*) starting from above the liquid is so connected as to carry unabsorbed chlorine out of doors. The chlorine gas is regulated by a valve (*a*) in the head of the chlorine cylinder. The glass tubing used should be ½ inch inside diameter.

Operation.—Dissolve 1.33 pounds of potassium ferrocyanide in about 2½ quarts of distilled water and pour into cylinder *B*. Nearly fill bottle *C*

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with a ten per cent. solution of caustic soda. Connect the chlorine cylinder with tube (*b*) by means of a short piece of rubber tubing and tube (*e*) with tube (*f*) and finally run a tube (*h*) from bottle *C* out of doors. Turn on the chlorine gas and allow it slowly to bubble through the solution of potassium ferrocyanide. Shut off the chlorine at intervals of a half hour or so and to aid the absorption of the gas shake or agitate the container. Do not allow the caustic soda solution to suck back when the gas is shut off. This can be prevented by breaking the connection between *B* and *C* immediately after shutting off the chlorine. Continue passing the chlorine into the potassium ferrocyanide solution for some time after the color has darkened considerably. After this frequent tests are necessary to determine when the oxidation has been completed. To test for complete conversion to the ferricyanide, draw off a little of the solution through the petcock (*d*), dilute with distilled water and test with a solution of ferric chloride. If a blue precipitate is formed potassium ferrocyanide is still present and the process must be continued. If a brownish or amber-colored solution results, the oxidation is complete. After tests show the oxidation to be complete, turn off the chlorine gas, disconnect the chlorine cylinder and connect (*b*) with an air pressure line. Bubble air through the solution until no odor of chlorine is noticeable. In case air pressure is not available and suction can be obtained, break the rubber connection between tubes (*e* and *f*) and connect (*e*) with the suction and draw air thorugh the solution until free of chlorine.

Great care must be exercised that no chlorine escapes into the room and comes in contact with the flesh, as it is a powerful irritant and serious injury may result to the throat, nose, eyes and hands from exposure to the fumes or contact with the liquid.

An Intensification Note

Although a plain solution of mercuric chloride is frequently recommended for bleaching purposes when intensifying, it is not the best which can be used. A cleaner result is to be obtained by adding to the mercury solution a little hydrochloric acid, or, failing that, a little of some alkaline chloride, such as potassium chloride, or even common salt. It is preferable to put this into the water before dissolving the mercuric chloride in it.

Instead of using plain water, therefore, one dram of hydrochloric acid may be diluted to make ten ounces, and the stock solution of mercuric chloride made up with this. It will be found that this solution does not tend to throw down a white precipitate of mercurous chloride, which the plain solution of mercuric chloride will do in the course of time. Intensification carried out with the acidified solution has less tendency to leave any film of deposit or veil upon the clearer parts of the negative which is dealt with; and this clearness can be carried still further if equally dilute hydrochloric acid is used for the first two or three washing waters after bleaching.—*Photography.*

Spend One-half Minute

Spend one-half minute or more each day going down to your studio a little earlier in the morning if necessary, looking over your stock, seeing that the stoppers are all in the bottles of chemicals, that the unexposed plates are not left where they will get damp, that your paper is securely protected from light, that your mountings are carefully covered up and you know the exact number you have as well as color of the same, that your posing chairs and backgrounds are free from dust, that you can find a large enough space to make a photograph on your background, which is free from tears or holes. You may think it is not necessary to go over this every day but unless you have a time set apart for this work, whether it is once a day or once a week and do the work carefully, you will find that you are losing out in the long run. It is a mighty easy thing to pull the mounts out of several boxes and leave the empty boxes on the shelves, forgetting that they are empty and some day when you are in need of this style of mount you discover that you must get them from the stock house, and keep your customer waiting. Now if you will put into practice what we have put into print it will mean dollars in your pocket.—*Ohio Photo News.*

Faked Photographs: A Simple Method

In the *Australasian Photo. Review* for December, 1915, there are some excellent examples of "faked" or trick photography. One shows a horseman jumping over a substantial timber fence many times as high as his horse, in another elephants and deer are seen wandering in the public gardens, while a third is a most sensational view of a boat, a lighthouse, and a stormy sea. All have been done by Mr. J. Montheith, who describes the very simple procedure which he adopted, which is that of making a combination print.

To do this a print from the original negative, say of the public gardens, is made, preferably on a velvet surface gaslight paper, and the animals or whatever are to be introduced, are photographed in a similar lighting to that of the landscape. A gray day lighting simplifies matters, as there are then no heavy cast shadows. Thin gaslight paper is to be preferred for the prints. Dry mounting tissue is attached to the back of the print of the animal, and with a pair of scissors with fine points the part of the print required and the mounting tissue are cut out carefully. The cut out animal, or whatever is to be inserted, is then dry mounted in position on the first picture. If the print has been very carefully cut out, there will be no need for spotting or working up. If any dry mounting tissue shows round the edges this may be carefully scraped off. The white edges of the print may possibly show, and these can be readily touched up with a little Indian ink.

The next step is to rephotograph this composite picture, preferably on a slow plate. In doing this shadows cast by the edges of the cut out print must be avoided by arranging the illumination so that the subject is lit entirely

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from the front. If the copying is being done at night, the necessary illumination can be got by burning equal lengths of magnesium ribbon on each side, shading the lens from its rays. An enlarging camera is very helpful.

The examples show what can be done in skilful hands by a very simple method. Those who feel inclined to try their hands at it will find that the points which demand most attention are (1) choosing suitable subjects and securing identical lighting conditions in both, and (2) working with enlargements when making the combination print, so as to allow of ample reduction when making the new negative, which helps to render any joins invisible.

Your Negatives

The status of the photographic negative has been established by court decisions, and it is very plainly understood now. The negative belongs to the photographer, and it does not have to be delivered to the customer for any reason, and the customer has no claim on it whatever, except to prohibit prints being taken from it other than by his direct order. The negative is not the finished product, but is a part of the process, and is legally considered a tool, just as much as the camera or lens or the chemical solutions. The customer is concerned only with the finished picture, for that is what he buys and pays his money for.

There has been creeping into use a habit that is liable to break up this condition if not watched. In the orders for commercial work and in the billing of this work, the photographer has, perhaps unconsciously, adopted the phrase of "So much for the negative and so much for the prints," and in billing to customers they will bill, for instance:

5 negatives	$5.00
10 prints	3.50
	$8.50

This wording gives the customer the idea that he has bought and paid for the negative, and if so inclined he can and does make demands upon the photographer for the negative as well as the prints, and the bill rendered to him and the contract under which they are made are so worded that if he insisted upon his right to become possessed of the negatives he would be in a fair way to get them. This complication recently arose and came to an issue, and the photographer who had been unconsciously taking orders and billing in the manner mentioned, found that he was face to face with a very delicate problem.

After legal advice, this photographer no longer quotes a price "for making a negative," nor does he bill the making of the negative or mention it in any way. He follows the form given below:

5 original photographs . . .	$6.75
5 duplicates	1.75
	$8.50

The negative belongs to the photographer, and this should be impressed upon the customer. The immediate and future orders are the products of that negative, and the photographer should not fall into the error of either giving the impression that the customer can own the negative or bargain with him for the possession of it. The law is established, and in order that it may be maintained the photographer must not forget to follow the spirit and letter of the law if he expects to be protected by it.—*Trade News.*

Summer Developer

With the spring and summer months approaching, it should be remembered that the solutions used in photography will act differently than during the colder months.

Developer especially will have a different action. If a small amount of developer is allowed to remain in a tray in a warm room it will soon take on the temperature of the room.

Developer should be kept at a temperature of between 65° and 75° F., as the chemical action is best at that temperature.

Developer used at a higher temperature will work rapidly, and prints normally exposed will appear to be overexposed.

This leads to underexposure and overdevelopment, with the consequent loss of quality in prints.

Keep your developer as near normal temperature as possible for best results. If this cannot be done, use more bromide in the developer to restrain its action, or dilute the developer somewhat with water to slow its action.

This will allow correct development of a normally exposed print which would otherwise develop very rapidly.

In warm weather the remedy for too rapid development lies in correcting the action of the developer and not in giving the print less exposure.

Correct temperature for the developer is, of course the most desirable way to work, but the use of extra bromide or more water is preferable to underexposing the prints.

Make a mental note of these facts, and you will be able to handle your summer developer intelligently.

Summer Negatives

The foregoing article in regard to the temperature of developer applies to plates in a general way.

We will not attempt to give you instructions in regard to your plate developer, but can safely say that in summer it will work more rapidly and consequently will produce coarse-grained, harsh, or contrasty plates.

One way to avoid this trouble is to dilute the developer with water to slow its action. We do not recommend the use of a bromide restrainer in plate developer, as it may change the quality of the negative.

The manufacturer of the plates you are using can give you accurate advice in regard to making negatives during hot weather, and how to modify the developer to preserve all the delicate gradations so necessary to high-grade work.

A general rule that can be applied is to use a developer that works fairly slow, as this will give

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you a fine grain silver deposit in your negatives. After negatives are fixed and washed *dry them quickly.*

An alcohol bath after washing, then drying quickly with circulating air, is one way to avoid the dense blocked negatives caused by slow drying during hot weather.

We are interested in good negatives, and offer these few suggestions to help produce negatives of good printing quality.

If the negative is good the print will be good, and that's what we want you to have—good prints.

Reviving Faded Prints

In looking through the portrait album, one cannot avoid being struck by the number of "counterfeit presentments" of more or less illustrious ancestors, which are turning yellow with age and thus losing all semblance of portraits.

It is obviously desirable to stop this decay, and fortunately the means of so doing is very simple.

If the print be unmounted, it is only necessary to immerse it in the following bath:

Mercuric chloride . . .	1 gram
Water	100 c.c.

Allow the print to stay in the solution until the last traces of yellowness have gone, then wash thoroughly to get rid of the mercury compound.

But if, as is more likely, the print be mounted, a slightly different method of procedure must be adopted. Cut a piece of white blotting paper to the same size as the print and soak it in the above-mentioned solution of mercuric chloride. Lift out and allow the superfluous liquor to drain off; then lay it carefully on the print and keep the whole in close contact in a press or beneath a weighted board. After a short interval examine the print, and if need be repeat the operation. Meanwhile, prepare half a dozen similar pieces of blotting paper, and when the whole of the yellow color has been removed from the photograph, it may be washed by placing successively in contact with it the six sheets of blotting paper previously soaked in clean water. Allow to dry, and the print will be found to be very greatly improved. The original purple is in many cases not restored, being placed by a warm brown, very pleasing to behold, and suggestive of the modern non-toning papers.

As to the permanency of this method of restoration, there seems to be no reason to doubt but that it is in no way inferior to any ordinary silver process.

Another method of restoration must be mentioned, though "restoration" is hardly the best term for it, as will be seen.

The picture must be soaked in "lukewarm" water to remove the mount, and then thoroughly dried in a warm place. When dry, melt some paraffin wax in a clean tin and dip the photograph into it. Drain quickly and lay it between two sheets of white blotting paper, then press it with a fairly hot flat-iron to squeeze out the excess of wax. While still hot lay the photo on a warmed board and rub briskly with a pledget of absorbent cotton until it is cold. This forces the wax into the fibers of the paper and renders it semi-transparent, at the same time greatly deepening the contrasts. Small details previously unseen now appear, as in a glass transparency, and the yellow-whites are made translucent, though the shadows and half-tones are very little changed.

The translucent whites and nearly opaque shadows fit the picture in its present condition for printing purposes, and therefore a negative should be made from it. From this reproductions in any style, or enlargements in any size, may be obtained, the permanence of which depends entirely upon the worker. The old print may be mounted between glasses for use as a transparency, or may be used flat in a slip-in mount.

Evolution of the Background

Little attention was paid to backgrounds in the early days of photography. This is not to be wondered at. Photography was an important scientific discovery, and so much time was devoted to mastering technical details that the art side was overlooked. It was only when the invention became firmly established, and could be worked with some degree of certainty, that photographers realized the artistic possibilities that photography put into their hands.

The first attempts at background painting were not successful. Aerial perspective and light and shade were not studied by the painters. There was a great demand for backgrounds representing the approach to a baronial hall, or the interior of a ducal drawing-room. It was quite common to see photographs of artisans with hobnailed boots and tweed caps, standing with one hand resting on an elaborately carved table, in an apartment that could only be seen in a Royal Palace.

As time went on, however, and the demand for portraits increased, photographers realized that, to produce pictorial effect, backgrounds would have to be considered from a more artistic point of view. They discovered that the background was an important part of a picture, and should not be painted in such a way that its details called for as much attention as the portrait. They saw that the background should act as a foil to the figure; not obtruding itself, but, as its name implied, serving as a ground to back up the portrait. The backgrounds of famous pictures by such men as Reynolds and Gainsborough were copied, and their schemes of light and shade imitated in the studios.

Since then the evolution of the background has been rapid. Light and shade effects, suggested by the great masters in portrait painting are still used to some extent; but the idea of slavishly copying the backgrounds of these artists is never entertained.

Photographic portraiture of today has thrown away its crutches. It stands independent, strong, and vigorous. The men who practise it have ideas of their own; they are capable of inventing a scheme of light and shade, and of carrying it out in an artistic manner. Individuality is stamped on present-day work. Men

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are not afraid to give expression to their ideas of beauty in their own way. Some photographers work in a high key, producing light delicate portraits; others work lower down on the scale of tones, and turn out pictures full of rich deep shadows.

The background painter must adapt himself to meet the demands of all classes. His work must be up to date. It must help the photographer and not hinder him. In short, the man who produces backgrounds must be an artist.—*Professional Photographer.*

In seeking new clients don't forget to take good care of the old ones. The foundation of any business is long-standing good-will.

Don't grumble about the man who cuts prices; he knows the value of his own work, and evidently thinks it is not worth what it was.

You cannot be certain of your profits, unless you are sure of your costs.

Pictures in Bronze

Pictures in bronze, if properly made, will give much pleasure, but they cannot be produced by careless manipulation. The process requires particular and painstaking care, otherwise the results will not be satisfactory. The formula for the compound is made as follows:

Water, distilled .	(100 c.c.)	3½ oz.
Cane sugar . .	(2 gm.)	30 gr.
Glucose . . .	(5 gm.)	75 gr.
Gum arabic, powdered . .	(5 gm.)	75 gr.
Honey . . .	(1 gm.)	15 gr.

After the ingredients have all dissolved, 10 c.c. or 170 ℿ of a saturated solution of bichromate of ammonia are added to the mixture. It is allowed to stand for some hours and then carefully filtered two or three times. With this solution the plates are coated. It is important to obtain an entirely uniform layer, and dust or other impurities must be prevented from coming in contact with either the solution or the prepared plates.

It will be better to dry the plates near the fire; doing so perfectly will require from five to fifteen minutes, after which they may at once be exposed, in a printing frame and under a negative, to strong, diffused daylight. The time of exposure depends very much upon the amount of moisture in the air. In this respect they are somewhat like platinum prints. It is always a good plan to make a trial exposure, say, of ten minutes. It is better to expose slightly too long than too short.

Development is done with bronze powder; a a tuft of cotton being charged with the powder and passed lightly over the surface of the plate. This manipulation, as well as the coating, may be effected in a not too strong artificial light or very weak daylight. As soon as the image has been fully developed, a second clean tuft of cotton is lightly brushed over the surface of the plate to remove the surplus bronze powder. This last should also somewhat burnish the picture and make the deepest shadows entirely free of the powder. Splendid effects may be obtained if various colored powders are used for different parts of the picture.

After the image has been completely developed, the film is coated with a 2 per cent. collodion. Probably the originator of this formula intended to advise a collodion made up as follows:

Alcohol, absolute	1 oz.
Ether	1 oz.
Gun cotton	2 gr.

To this should be added a very small amount of glycerin, just sufficient to make the collodion flexible. The plate should then be exposed to sunlight from the back or through the glass side.

After fifteen to twenty minutes, the proper duration of time depending upon how bright the light is, the plate is washed in running water until the yellow color has been remove and the water remains clear. It is then dried and the surface varnished with diluted copal varnish, or with colorless Japan varnish in case the support is a metal or ferrotype plate. In the case of glass plates, the coating should be one of dark brown or black asphaltum varnish, as this will give almost the same effect if the picture be looked at from the back or glass side.

While I have never tried them, these directions may be considered correct, as they are translated from *Liesegang's Photo-Almanac* (German) by M. F. Veress. They have been in my possession for a number of years. Another formula, more condensed, and one which some one might like to experiment with, follows. A ferrotype plate or a glass coated on the back with asphaltum varnish is coated with:

Water, distilled	30.0 parts
Gum arabic	2.0 parts
White sugar	1.1 parts

After printing, the plate is dusted over with a white powder or precipitated metallic silver, collodionized, washed and finally varnished.

T. E. Peiser, in *Camera Craft.*

Toning with Anilin Colors (Green)

Bleach and wash thoroughly in 32 ounces, water 80 gallons; 12 grains, pot. ferricyanide, 2 pounds; 24 grains, pot. iodide 4 pounds.

Dye for from two to six minutes in 61 grains, Malachite (anilin green) 4¾ pounds; 32 ounces, water 80 gallons.

Rinse well and clear the high lights in the clearing bath, 32 ounces, water 80 gallons; 80 minims, hydrochloric acid (concentrated) 2½ gallons.

The intensity of the green tone can be varied by concentrating the dying bath.

Other anilin colors can be used instead of Malachite with equal advantage.

Detecting Faked Photographs

Faked or otherwise deceptive photographs are frequently used for fraudulent and criminal purposes. The expert photographic witness, giving reasons for or against the admission of certain prints as evidence, has become quite

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commonplace—even so long ago as the Tichborne days his importance was acknowledged. A few brief remarks on possible methods of detecting unfairly made photographs may not be without interest.

Attempted deceptions takes the form either of showing or suggesting what was not really there at the alleged time, or of asserting the absence of persons or things actually present. Retouching, combination printing, knife-work, and chemical treatment have all been dishonestly employed, as well as various devices usually classified under the name of "trick" photography. Wide-angle lenses have been pressed into service to exaggerate the size of near objects or to increase the apparent distance of those farther off; contrast filters have been utilized to secure misleading records, and so on. Wide-angle effects are almost self-evident to a trained eye, and can often be demonstrated by comparing the measurements of standard objects in the picture, such as bricks, lamp-posts, etc., and thereby calculating distances. Suppression or undue emphasis by the aid of a light-filter is, however, not easy to deal with, unless the object or scene is still accessible or can be reconstructed.

A suspected print is first closely examined with a good hand lens—a reading-glass magnifying about three diameters being very suitable. For more critical inspection of small details the Coddington lenses sold for stamp collectors are excellent; or, better still, one of the achromatic hand magnifiers employed by engravers may be used. These means alone often suffice to betray additions or deletions by pencil, brush, or knife, as well as the less perfect examples of combination printing or dogging. Contrary to what might be expected, one of the most difficult things to detect, when well done, is the introduction of a figure or object cut carefully from a print, pasted on a second print or ground, and rephotographed. Provided the lighting, depth of printing, and tonality of both figure and ground agree, and proper precautions have been taken against a "cut-out" effect, the hand lens may fail to expose the imposition. The keener eye of the camera must then be requisitioned. A good size direct enlargement is made, which is almost certain to betray any ordinary faking, by bringing to light obvious traces of outlines, disagreements of texture, or pencil and brush marks where junctions have been concealed.

A specially made long-extension camera is necessary, taking plates at least 12 inches by 10 inches, with carriers for smaller sizes. The degree of enlargement may be from three to six diameters, and when the whole of a print has to be copied it will, of course, often have to be taken in sections on different negatives. The lens should be a first-class anastigmat. If only one lens can be purchased, 8½ inches is perhaps the most generally useful focus. This will require an extension of 5 ft. for enlarging up to six diameters.

Ordinary plates of fine grain, having a speed of from 50 to 100 H. and D. are best. A magnifier should be used for focussing. Exposure and development must be for detail rather than contrast, save in some exceptional cases. The prints are best made on glossy bromide or P. O. P., printed on the light side, and preferably squeegeed, though sometimes gaslight paper will give extra detail. Examination of the negative itself ought not to be neglected, as this may show something lost in the print. Bromide enlargements are useful if nothing better is available, but cannot compete in detail with direct enlargements. When the part under suspicion is very small, photomicrography may be of service.

Faked work on negative or print is at best but a clumsy expedient, and practically sure of discovery when technical skill is at the service of justice. Far more deadly are genuine photographs in which the subject itself has been faked. Thus a few years ago a criminal just escaped arrest by producing a photograph showing him in his sitting-room at home, far away from the scene of his offence, at the time the latter was perpetrated, as proved by a tear-off date calendar on the wall and by the clock. It was not till too late, when oceans intervened and all trace was lost, that the photograph was clearly shown to have been taken before the event, the calendar being made to give false witness.

The time factor, indeed, is often of value. If a faked photograph is alleged to have been taken at a certain hour, it may be quite practicable to disprove this by the evidence of cast shadows; and, as a recent American case has demonstrated, it is even feasible to check the actual date by similar means, under favorable circumstances.

Weather conditions are a common pitfall to the faker, and, in the absence of other indications, should always be verified. As an instance, a photograph brought forward in a a building dispute showed rain on the pavement, whereas the meteorological records proved that none had fallen in the district for over a week. In another case a picture taken immediately after sunset included a new moon, which should have been full to tally with the date claimed.

Secondary objects or accessories, seemingly of no consequence, may lead to exposure. To give an example, so altering the story as to avoid any clue to persons or places, important issues depended on disproving a lady's asserted presence at a certain watering-place on a given date. An amateur snapshot, apparently genuine, showed her standing just inside the pier entrance; newspaper contents bills hung on the promenade railing served to fix the date. There could be no dispute as to likeness or identity, but the photograph was taken at a quiet time when no one else was about, and the turnstile attendant had no recollection of the lady. Her opponents, having serious reasons for doubt, submitted a copy of the print to an expert, who, after verifying the bona-fides of the photograph itself, tried to discover a slip in what may be called the "staging" of the picture. The weather conditions, however, tallied with the meteorological reports, the news bills were not chronologically wrong, nor did did anything else appear dubious. Either the picture simply told the truth, or very great care had been taken over details.—*British Journal of Photography.*

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For Masking Slides

All my slides are masked with four separate strips of paper (writes W. E. Cochrane, in *Photography and Focus*) so that the mask can be of just that size which the subject requires, and by help of a little piece of apparatus the strips can be placed down in the certainty that they are parallel with each other, and that the angles are right angles. It consists of a flat piece of wood of convenient size (mine is 7 x 9½ inches and ¾ inch thick). On it is glued a piece of card with an opening in the centre which just takes a lantern plate. The two strips are of wood, and are screwed down so that their inner edges are exactly parallel with the edges of the sides and ends of the slide respectively. The use of it is obvious. The slide being placed in the opening for it, a celluloid square is laid on top, one of the two edges forming its right-angle is brought up against one of the strips, and it is then slid up and down until it is in the required position, when it is held firmly with one hand, while the mask is laid down against it with the other. Or a pencil line may be ruled on the film and the mask laid against that, if the photographer feels it necessary to have both his hands free for the masking.

Soaping Bromoil Prints before Inking Up

The bleached and washed print is transferred to a dish of water at 70° F., a bar of ordinary primrose household soap is rubbed on the hands so as to get a good lather, and this is then rubbed well on to the surface of the print while it is soaking in the water at 70° F. A final wash is given at the same temperature, and the print may be placed on the base for pigmenting. It is surface dried, and will ink up readily, no matter what developer has been used.

This method has never failed me (writes "Experientia" in *Photography and Focus*), provided the original bromide had correct exposure. The whole secret of the process depends on the condition of the gelatin of the bromide print for absorbing the requisite amount of ink; and the soaping of the print seems to give just the necessary attraction to the gelatin for the ink, so that no further trouble is experienced. If the print is an old one it is necessary to give a preliminary soaking for one hour at 65° F. before bleaching.

Apparently the ready absorption of the ink is due to the small quantity of alkali contained in the soap, which leaves the gelatin with its surface in the right condition to take the greasy ink. Prints so treated can be inked in a very short time.

Intensifying Self-Toning P. O. P.

It is of course well known that we can modulate the final color of a self-toning P. O. P. print by a preliminary bath of salty water and so forth. But this command of color range is not very great, so that any additional arrow to our quiver may be useful. Here is a method which I have tried on a self-toned print which was put straight into the hypo. This print was when dry of a somewhat, but by no means an objectionable, red color. The print was put into a chromium bath similar to that used for bleaching and redevelopment of negatives with a view to intensification. The following is a convenient stock solution which keeps indefinitely: Saturated solution, practically a 10 per cent. solution, of potas. bichromate 2 ounces, hydrochloric acid 1 dram. To make a bleaching bath for negatives take 100 minims of this stock solution and add water to 1 ounce. For prints I advise only half this strength; this acts slowly and gives a duller streaky-looking, half-washed-out effect but, given time enough—from five to ten minutes—the result is uniform. The print being partly gold is only partly bleached or lightened. It must be washed till all yellowness is entirely removed from the paper. The white rebate margins of the print guide us in this respect. It is then redeveloped by any alkaline developer. Contrary to general notions, alkaline pyro is quite effective and gives a cool, slightly chocolate-brown color, considerably less red than the original state or color of the print.—*Amateur Photographer.*

Dust

Dust, like moisture, when suspended in the air, acts as a damper on the chemical value of light. Any substance, no matter how fine a texture, when placed between a source of light and the object illuminated, will cut off some of the light energy, and in the case of dust so large a percentage is scattered that from a photographic point of view a very considerable loss of actinic power occurs.

Dust, stirred up by storms, dust in the form of smoke—either the pall that hangs over a city or over a countryside when fires are raging—must be carefully taken into account when estimating exposure.

A further dust menace is in its scattering effect when allowed to accumulate on lens surfaces. This scatter explains many a case of general fog on negatives, dulness of the image, and halation even on films which have been guilty of this fault before with the same camera.

The effect on the film is similar to that on the eye when watching a landscape wrapped in mist.

If general fog occurs, look at the lens. Remove the dust or film of moisture on its surface inside and out; in fact always see that the lens is clean, *but do not scrub it.*

Avoiding Pins with Mercury Intensifier

A. R. Myhill recommends, as a preventive of the pinholes which are liable to be caused in darkening mercury-bleached negatives with ammonia solution, the use of ammonia in vapor form. The negative is bleached in the mercury bichloride solution in the usual way, put to wash for from fifteen to twenty minutes in running water, and then laid face down over a dish containing a little of the strong 0.880 ammonia. The most convenient method of supporting the negative is a carrier as used for handling a plate of the particular size in a larger dark-slide. The vapor rising from the ammonia

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quickly darkens the negative, and, though the first action may be patchy, the intensification is complete and even within four or five minutes. —*Photography.*

Retouching Hints

When retouching very large heads I have always found it difficult to get sufficient work on the film, and so have had to varnish and rework. Recently I have made an experiment which has proved quite a success of obtaining a surface which will take almost an unlimited amount of lead at one working. Place a few drops of ordinary negative varnish on the film of negative to be retouched and rub with a piece of old handkerchief in a circular motion as if you were using retouching medium, dry for a few seconds before the fire, and when cool apply the ordinary retouching medium and you will have a surface that will give a splendid grip to the pencil. Incidentally the varnish will protect the negative from silver stains. When the retouching pencils are not in use, don't leave them about to get the points broken, but reverse the leads in their holders, *i. e.*, place the point inside the holders, they will then be in good condition for the next day's work.—Plumbago, in *British Journal of Photography.*

Magnesium and Moisture

It is of great importance that magnesium powder and wire should be kept quite dry if the metal is to retain its silvery appearance. Magnesium does not oxidize in dry air, and only a thin film of oxide forms in moist air. But in contact with water, chemical action takes place, the magnesium being oxidized to magnesia and the hydrogen of the water escaping. If a piece of bright magnesium ribbon is immersed in cold water it will soon become covered with innumerable bubbles of hydrogen, and much more rapidly in warm water. The powder is particularly liable to rust in contact with moisture on account of the very large surface presented by the innumerable particles of metal.

Preparing Negatives for Drying

D. Berlin points out that when taking negatives from the wash-water and placing them on the drying rack all necessity for removing the surface moisture by a cotton pad, whirling, or other means is avoided if each one be taken (after the usual last swilling under the tap) and placed immediately on a drying rack of the kind that allows one corner to be downward and clear of everything. The whole of the water will then run off the film in one unbroken flow, and will leave no drops behind.

The three essentials to be observed are that the plate should be entirely covered with water from the tap (or dipped under water) immediately before placing in the rack; that there should be plenty of room between the plates in the rack, and that the plates must be kept with the same corner downward till all the water has run off. Often this takes only a few minutes, but the time varies greatly under different conditions.

If the flow of water is checked by holding up the plate for any reason at another angle, even only for an instant, there is a likelihood of drops forming. In the case of plates which have been treated with intensifier, etc., these should be always examined about half an hour after being placed in the racks; but those which have been merely developed and fixed need not be touched till dry.—*British Journal of Photography.*

Cleaning-up Prints with Dirty Edges

If a batch of prints has been made in the ordinary way, and it is desired to clean them up and remove the stress marks, a weak solution of the usual ferricyanide and hypo reducer may conveniently be employed. This reducer is made up by taking, say, 5 ounces of 10 per cent. hypo and adding a few drops of 10 per cent. ferricyanide of potassium. The solution must be much weaker than would be used for reducing negatives, or the prints will be spoiled. They should all be soaked in clean cold water, and then taken one by one, face upward, on a sheet of glass, the reducing or cleaning solution being mopped over the margins with a good sized tuft of medicated cotton wool. The tap should be kept running and the print frequently rinsed under it, and the glass supporting the print should be so held that the solution will not run across the face of the print. As a rule a very slight application is sufficient to clean up the edges perfectly. Naturally the prints must be well washed again to remove the cleaning solution.

Of course, this method involves a certain expenditure of time, and it should not be done until the prints have been washed after fixing, especially if an acid fixing-bath is used, as it should be for bromide and gaslight papers. Instead of using a few drops of a 10 per cent. solution of ferricyanide, a small crystal may be dropped into the 10 per cent. hypo solution, and stirred with a glass rod until the solution is a very pale lemon yellow.—*Amateur Photographer.*

Narrow Black Frames

There is a process (says a writer in the *Amateur Photographer*) whereby any whitewood frame may be brought to a lustrous ebony finish, free from glaze, quite distinctive and absolutely unique in the richness of its quality.

The process is inexpensive and not difficult to apply. For many years it was the jealously guarded secret of certain French cabinet makers whose work was sought after and defied imitation. Subsequently the method was disclosed, and it is now known to the trade as charcoal polish, being used only in the best cabinet work, as although the materials are simple, it takes time and care to apply them.

The process may be briefly described as follows:

The wood should be close-grained and finished off quite smooth, and be perfectly clean.

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Two solutions are required:

A	
Camphor	½ oz.
Water	1 pt.

B	
Sulphate of iron	1 oz.
Nutgall	1 oz.
Water	1 pt.

First apply a coat of the camphor solution A, and, while still wet, follow up with a coat of solution B. The two solutions will combine and penetrate the pores of the wood, resulting in an indelible stain.

When the wood is quite dry, go over the surface with a very stiff brush; the brushes used by polishers in the trade are made of very hard couch grass. It will then be ready to receive the charcoal.

Apply powdered willow charcoal, or, in fact, any light charcoal that is free from grit; stick charcoal may be used on flat surfaces where it is convenient, rubbing it in evenly and thoroughly.

Next take a soft flannel rag and soak it well in linseed oil, adding sufficient turpentine to make it work freely; squeeze it out firmly, and go over the whole surface, rubbing evenly. Repeat this several times until the charcoal powder and the oil have penetrated the wood and the desired finish has been obtained.

Fixing Bath Stains

Of the many examples of stained prints which come before us week by week, probably the majority arise from incomplete fixing in one way or another. Such deficient fixing may be general or local—the print may not be treated long enough in the hypo bath or the bath may be one in too great a state of exhaustion. We think it is common knowledge that during the past year, owing to the employment of new descriptions of paper base, more thorough fixation is necessary in order to thoroughly clear out the excess of silver compounds. On that account the advice to use two fixing baths in succession is one which should not be neglected, for the practice represents the best means which can be taken for the complete fixation of development prints. But even the use of two baths, unless they are very large in proportion to the number of prints treated in them at a given time, will not obviate the danger of local deficiency of fixation. Very often the fixing bath becomes so full of prints that it is almost impossible to place other prints, as they should be placed, below the surface of the bath. With many papers immediate immersion in the hypo bath is a necessary condition of absence of stains, and where patchy stains on the final print are found to occur in an erratic manner we should be inclined to suspect want of complete immersion in the first instance as the cause. In that event a good plan is the one we suggested some time ago, viz., to let each print have a minute or so in a hypo bath and then to transfer it to the main bulk of the prints in a second fixing solution. The method ensures each sheet of paper being fully exposed to the fixer.—*British Journal of Photography.*

PATENT NEWS

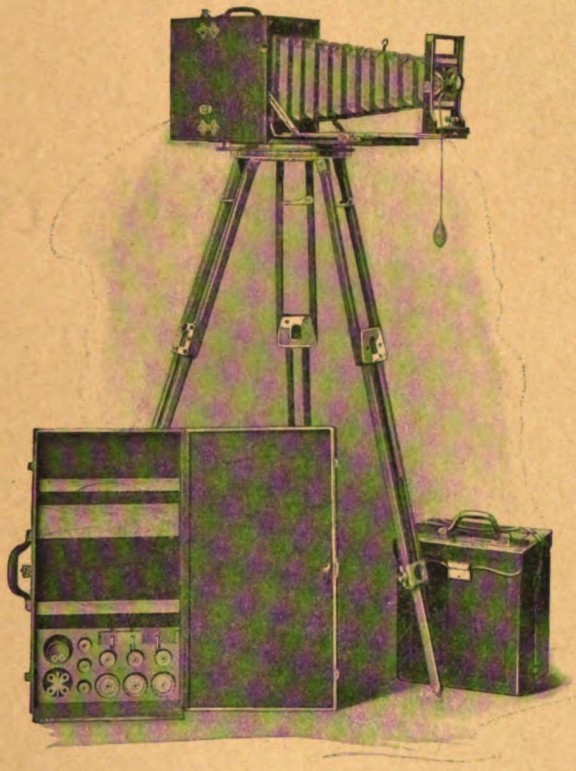
Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Camera. J. Becker. 1178474-8.
Finder. J. Arrufat. 1178439.
Film Winder. O. C. Boege. 1177985.
Printer. E. J. Schroder. 1177818.
Developing Tank. F. J. Gaukel. 1177614.
Developing Apparatus. W. C. Uhl. 1178278.
Developing Films. L. Gaumont. 1177697.
Printer. W. A. Lens. 1177898.
Shutter. Bropky & Manau. 1177921.
M. P. Projector. T. A. Edison. 1178062.
M. P. Apparatus. Tilley & Austin. 1178461.
M. P. Machine. E. L. Oppenheimer. 1177797.
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Producing Illustrations. A. L. Ormay. 1179749.
Coating Machine. Cossitt & Castor. 1180255.
Printer. A. H. Wallace. 14114 (reissue).
Film Package. Nasief & Dorsey. 1180415.
Background. J. O. Wheelock. 1180682.
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VOLUME LIII JULY, 1916 NUMBER 7



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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII JULY, 1916 NUMBER 7

INDIVIDUALITY

By ELIAS GOLDENSKY

IT is established that photography is rapidly advancing toward the artistic. Its influence is felt everywhere. Technical perfection is an everyday fact. The products that we are using are of the highest quality, and today the men behind the camera, whether they are making postal cards for the masses or working for the exclusive clientele, do not encounter any difficulties in chemical manipulations or lack in any mechanical devices to facilitate the producing of their work toward a higher standard. We owe this advance to the progress of the twentieth century in general and to the manufacturers for the excellent products that they supply, and not least to the photographic press. Beyond doubt, photography has a function that everyone respects, but the question seems to be, whether progress must be confined to technical advancement, or also may develop toward a higher pictorial achievement.

When one considers the great mass of conventional productions in portraiture, one feels that there is a greater scope for advancement.

The photographer of today is eager for something higher; he is not satisfied with everyday results; he feels that he lives in an age of the keenest competition, and success depends on producing the highest quality of work. He knows that trade secrets are of the past; that his technic is at his command; and, on the other hand, the public, and he himself, are influenced by the advanced workers in pictorial photography. They endow the work of the camera with pictorial composition, atmosphere, and personal temperament, and pursue their experiments regardless of the frequently expressed opinion that photography is not and never can be an art. The public has been satisfied with a mere likeness, especially if carefully executed, while interpretation of character or

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inner nature of the sitter and pictorial values in arrangements have not been much demanded. Very likely they were not supplied.

The professional photographer has been content to benefit by the public taste, and eventually he becomes a tradesman. Some photographers are still of the opinion that a technically executed picture must necessarily be the truth, excluding the thought that there is a higher truth than this.

The advanced amateur proved this to us by using the same mechanical devices and supplies, and yet producing pictures of the highest artistic conception. He is full of inspiration; he sees art in nature through his temperament; his conception is direct; his work has the element of life, even though he may lack certain technical manipulations. He learns the principles and carries them out by methods that accord with his own temperament. It is often said that professional photographers are inartistic as a body, and it is perfectly true. To verify this statement, one should see some of the past exhibitions at the conventions, and recollect that in such a conglomeration of results how very few pictures had sentiment or meaning. But, thanks to the educational influence of the conventions of recent years, this old traditional method of overcrowding the exhibition walls with inartistic and tiresome mediocres is rapidly disappearing.

We have men in our profession who raised a new banner with the motto on it: "Show one picture, but the best." This brought legions of enthusiastic workers under it. This motto stands for highest results for the artistic, for the beautiful. It stands for individuality. It means that your picture is not the same as your neighbor's, but different. That in one picture you show your best efforts; that you should train yourself to individualize your work, because individuality is the keynote to the artistic. It means that the picture should have some purpose, and that purpose should not be conflicting; that yout intentions should be expressed in the most simplified form, whether it is a type, character or intellect, beauty of line and form; whatever your aim may be, express it direct, and this directness should be your emphasis and your result. All this combined should mean individuality. You may have a trick or two in the treatment of your subject, you may master a certain given light effect or certain clever arrangement or pose, but all this is mannerism and not individuality. Individuality is the result of a certain training to memorize facts and forms as they pass our observation, and be able to register them as they appear to our artistic, esthetic taste, which is the logic of our artistic training.

The spirit in photography is light. Study the values of the highest light comparing with the darkest shadows. Do not forget about the planes, as they give you perspective. A proper treatment in composition, balance, or decorative arrangement will give your picture character and structure. Suppress in the picture what is uninteresting, giving emphasis, expressiveness, and simplification of the unimportant, strengthening that which is interesting.

Individualize your work, not with odd effects, but with results true to Nature, because Nature is the source of inspiration, and that is artistic.

IT is well for you to talk of life being easy until you are face to face with some important obstacles.

WHEN you go after a thing be willing to fight for it and then clinch it after you get it.

A DOUBTER is a failure, for we are in the world to strive and work and not to doubt.

MORE people have more to contend with in their own fears and doubts than with real obstacles. If you can not meet an obstacle any other way jump over it.

LIFE means work, but it also means growth.

DON'T worry if you have to struggle. Remember that precious metals have to be purified and diamonds have to be cut.

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ON ACTION PHOTOGRAPHS[1]

By JUSTIN R. WEDDELL

THE business of advertising has coined many useful words and phrases, as any new and virile business will. And of all the words coined there is none more used or more abused than "human interest."

Of all the qualities required in good advertising there is none more sought after, and often strained after, than human interest.

Though an advertisement be convincing as a government report, if it has not human interest it is nothing.

Though a layout be as balanced as the maltese cross, if it has not human interest it is nothing.

Though an illustration be as perfect as a photograph, if it has not human interest it is nothing.

Human interest is the *sine qua non* of effective advertising. Without it a fine display will not attract; well-written copy will not pull.

And the reason is obvious enough: for human interest is simply that quality in an advertisement that strikes a responsive note in the average person. Its name is its own best definition.

News will always attract—because it is real. It is something that has happened to someone like ourselves.

Romantic fiction will always attract—although it is unreal. It appeals to our imagination: it suggests.

A combination of news value and suggestion is, in our mind, the surest to attract human interest. And if any one thing most happily combines those elements, it is the photograph.

A photograph pictures something that really exists or that really happened. Almost any photograph, aside from a portrait, has news value; and any photograph that shows action—movement that has been suddenly caught and held—is full of suggestion.

The mind jumps at once to the story; what happened before—what happened next. An action photograph is a challenge to the imagination. It is packed full of human interest.

But the term "action picture" cannot be lightly applied to any photograph of arrested action. To deserve the name it must not only hint at a story, but it must lead the mind to some conclusion. It must have plot.

It is the hardest of all pictures to get. The right movement must be caught. Although the picture may be posed, it must seem not to be. The expressions must be unconscious—natural; the whole effect must appear to be unstudied.



THE DELIGHT THAT EVERY WOMAN FEELS IN OPENING A PACKAGE IS THE THEME OF THIS ILLUSTRATION FOR A FOLDER COVER.

The interest she displays communicates a like interest to the reader, and the satisfaction she shows establishes the beauty and utility of the dish by inference. The story is told here by expression and pose.

Anything obviously faked puts a curse on the picture that kills much of its value. There is no other form of illustration that must be so rigorously censored as the action photograph.

[1] Reprinted with permission from the attractive house organ of the Corday & Gross Co., Cleveland, Ohio.

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And right there lies the danger in their use for advertising purposes. Clever manipulation can do almost anything with a photograph, and because this is so it admits of startling effects sure to gain attention.

A few weeks ago one of the national weeklies displayed a most disconcerting series of photographs showing the German army in possession of New York. Their generals, in capes and spiked helmets, were hobnobbing with our leading citizens, drinking German tea on the lawns of our country clubs, and doing other unbelievable things. The realism of the pictures was uncanny.

Similar liberties have been taken with advertising pictures, and the back-action of such practice is that every effort of this sort serves to weaken the effectiveness of photographs as an advertising argument. For years the public has accepted a photograph at its face value. Photographs are admitted as evidence in court.

But with every successful hoax that your clever manipulator puts over, the authority of photographic illustration is put in question. And the time may come when the public will not accept any photograph for what it appears to be. We will look for the mark of the scissors, the evidence of tampering, just as we look for the wires that support our stage angels.

Truth in advertising must extend beyond the copy and take in the illustrations as well. And the truth loses nothing of dramatic force by being the truth. Rather it gains.

Moving picture directors saw the light years ago. The impossible tricks of the French films, the fake falls, the magic, were gradually putting the movies in disrepute.

But today, realism is the word—the goal for every director. The hair-breadth escapes are true. The falls, impossible as many of them seem, are real. What we see on the screen of wounderful adventure and hair-raising escapades are what actually went on before the camera. And it is that very fact that gives the movies so much of their appeal. So long as the truthfulness of such pictures goes unchallenged, so long will the movies pull the crowds. The same is true of action photographs, for the moving picture is simply the action photo carried out to its fullest manifestation.

Moving pictures have exerted a decided influence on advertising illustration. Their universal appeal has made them a subject for study and analysis. Whatever quality they possess to attract the crowd is the quality we are searching for as a guide in our action picture work.



PHOTOGRAPHS OF PORTABLE DRILLS ON THE JOB FEATURE A SERIES OF TRADE JOURNAL ADVERTISEMENTS AND FOLLOW-UP FOLDERS FOR ONE OF OUR CLIENTS.

Industrial scenes are always full of action, and the chief problem is to center the interest—to focus the attention—on the work of the machine. We call these "Reason Why" pictures.

The great difficulty encountered in getting an action view lies in the fact that a posed picture, especially a studio picture, is static. It appears as an isolated study, and the hardest thing about it is to convey through a single exposure the suggestion of some preceding action or subsequent action.

But that is just the thing your true

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WHEN ALL THE "PROPERTIES" ARE CORRECTED, THERE IS NOTHING MORE CONVINCING AND INTERESTING THAN AN INTIMATE PHOTOGRAPH OF THIS SORT.

It is planned for use in a hosiery catalog, and every detail, from the hangings of the room to the silk petticoat, is schemed out to convey an impression of daintiness and quality.

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action picture must do. That is the very essence of the moving picture—continuous, unbroken action. That is the effect to be sought after in an action photograph.

A recent photographic advertisement for an insurance company showed a crowd collecting in a busy city street. "An Accident!" Something has happened—Something is going to happen—What was the trouble?—Who's hurt?—Where's the ambulance?

All these thoughts flash through your mind when you see the picture. Its appeal is instantaneous. That was a true action picture.

But the dramatic element is not essential to a true action picture. A single figure conveying some thought through facial expression or pose may tell its story just as forcibly. The housewife operating a household appliance, provided her whole attitude suggests ease and satisfaction, is a true action picture. If it tells the truth it will surely sell the goods.

For several months the street cars in every principal city have carried cards advertising electric flashlights, and their photographic character has been the main strength of their appeal. We have seen the same utility advertised through the use of drawings, but their adaptability and wide usefulness have never been brought home so forcibly as in these actual photographs of the flashlights in use.

We do not assert that drawings will ever lose their usefulness or force in advertising illustration. On the contrary, there are some commodities that cannot be successfully displayed in any other way.

But the field is narrowing. The rapid advance in our understanding of photography and its commercial possibilities, as well as its limitations, is breaking down old barriers. There are few articles sold that are not properly subject to some energetic experimenting along this line.

But, on the other hand, the limitations of photography were very well shown not so long ago in the men's fashion field. A prominent manufacturer ran a series of advertisements based on actual unretouched photographs of his clothes both on and off models. After a time the campaign was altered in this feature.

The clothes did not look right. The individuality was not there. Some subtle appeal was lacking—probably the appeal to a man's vanity. The pictures were only distinguished by their adherence to truth; they were not faked.



IN ADVERTISING RUBBER BATHING CAPS A PICTURE OF THE CAP ALONE IS NEITHER SO INTERESTING NOR SO REALISTIC AS A PHOTOGRAPH SUCH AS THIS.

But after all, it was only a half truth. Clothes are given expression by the wearer. The reverse is not true. Although "the garment oft proclaims the man" it more often gets by on the strength of the wearer's personality. And it seems that your wearer of clothes in advertising display must be idealized if the clothes are to be given a fair presentation.

Nine heads high is the rule in fashion drawings, while your photograph will average nearer seven. The photographic effect is almost always "dumpy," which is not fair to the clothes. Here is one field where action photographs have far to go before they will overhaul the illustrator with his supermen and superior women.

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THINKING IN FOCAL LENGTHS

By BERTRAM E. HAVELOCK

THE making of lens calculations is, I know, an operation of which professional photographers fight shy. As an assistant I remember on several occasions being reproached for my slowness in getting a copy adjusted to the right size on the focussing screen, but when I asked what was the rule for fixing the camera at the right extension, or the original at the right distance from the lens, my employer was obviously stumped and could only save his face by telling me to look at the tables in *B. J. Almanac* if I wanted to go in "for that kind of foolishness." Since then I have been a student of those and other tables, and as a result have made it a rule to adopt a system of using lenses and to give instruction in the use of it to assistants which I now, as a master photographer, have under my control. Far from condemning the adoption of such a plan as this as "foolishness," I find that it saves an enormous amount of time and is very quickly grasped by any assistant of ordinary intelligence. In brief, it is to think of all distances such as camera extension or the distance of the lens from the subject not in inches or feet but in focal lengths of the lens or in fractions of the focal length. There is, of course, nothing new in that; it is familiar to the reader of any book on photographic optics. But it would seem as though many of my brethren are unaware of its practical usefulness, and therefore some note on the way in which I have applied it may be of general interest.

A Focal-length Measure

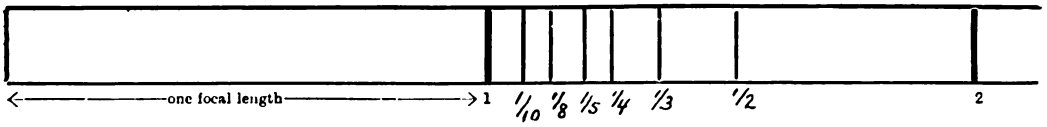
For every lens which is employed for indoor use, such as copying or enlarging, I make a special rule or measure. There is no need for extreme exactness because the purpose of the rule is to adjust matters "near enough" preliminary to exact focussing. A convenient form for the rule is an ordinary flat blind lath, or a longer flat strip of wood if the lens is of greater focal length. The lath is marked boldly on one side with the name of the lens, *e. g.*, Ross Rapid Symmetrical, 8-inch focus. The other side of the lath is marked out in a particular way. The first thing to do is, of course, to know the focal length of the lens either from the makers or by measuring it oneself. Then starting from one end, say, the left hand, mark off the distance of one focal length, then another similar mark at two focal lengths, and so on, up to seven or eight focal lengths, which is long enough for most purposes. The diagram which I give, for obvious reasons of space, can only show two focal lengths.

The next thing is to divide the space between the marks representing one focal length and two focal lengths into fractions of the focal length:—$\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{8}$, and $\frac{1}{10}$. This series again is about as wide as is generally required. It is a great saving of time if one has a lens the focal length of which is an odd number, such as $7\frac{1}{2}$ or $9\frac{1}{4}$, to convert this length into millimeters for the purpose of more readily arriving quickly at the various distances for the fraction. This is done by buying an ordinary rule graduated on one side in inches and on the other side in millimeters. I have one running to 20 in. Thus 7 in. are 190 millimeters, which length can be quickly divided by 2, 3, 4, 5, 8, and 10 in order to give the requisite fractional distances. These are marked on the rule starting from the one-focus mark, as shown in the diagram. So much for what I call my "focus-rule." The next thing is to see how it is used.

Focal Distances

For any copying or enlarging work I find there is no difficulty in getting assistants to grasp the rule which governs the position of the lens from the plate and from the original, that is when they use the "focus-rule" which dispenses almost entirely with any calcula-

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tion. The only thing the assistant has to figure out for himself is the degree of reduction or enlargement. Thus, if a copy has to be made of, say, a portrait enlargement (where the head is 8 in.) down to carte size, it is only necessary to divide the 8 in. length by the dimension which it should have in the carte copy, say, 3 in. This is two and two-thirds, or a little less than 3. Now for the use of the focus-rule in placing the copy before the camera. I explain that for a reduction of 3 the copy must be placed from the lens a distance equal to four focal lengths—always one focal length more than the reduction figure. Thus it is a matter of a few seconds to place the camera at the right position from the easel simply by putting the end of the rule against the easel and placing the end of the rule against the easel and placing the camera so that the 4 mark comes just over the lens stop. In the case I have chosen at random it should really be a little nearer than this, since the reduction figure is slightly less than 3, but it is near enough in practice to guess the difference, or, on the other hand, each focal length space on the rule can be divided into quarters.

Now, so long as the camera focusses from the rear (as a copying camera should), when the original is obtained in sharp focus, it will be of the right size. The method saves the constant fiddling about in the way of putting the camera nearer to or further from the original before a copy of the right size is secured.

Focal Distances in Enlarging

Exactly the same thing holds good in the case of making an enlargement, but here the conditions are not so easy for the reason that enlarging cameras are almost always of the front-focussing variety, and therefore every movement of the lens alters two distances at once, namely, that between lens and negative and that between negative and paper. This is where the scale of fractions of the focal length comes in usefully. I have to explain a further part of the principle, according to which the lens works in copying or enlarging, namely, that which governs the extension of the camera in copying or the distance between the negative and the lens in enlarging. Here the rule is one which is again readily grasped. In making an enlargement to twice the scale, that is, linear, or a whole-plate enlargement from a quarter-plate negative, the distance from negative to lens will be one focal length plus half a focal length. If the degree of enlargement is three times, it will be one focal length plus one-third of a focal length, and so on, according to this very simple arithmetical rule. In order to apply it for the quick adjustment of the enlarging easel I make two marks on the enlarging lantern, one on the fixed portion of the base indicating the position which the negative occupies and the other on the moving part of the baseboard indicating the position of the lens stop. This latter is made in the form of a projecting strip of wood or metal, so that my "focus-rule" can be laid evenly along so as to fall on the two points. Thus for a two-times enlargement the distance between the two must be one and one-half focal lengths; for a three-times enlargement, one and one-third focal lengths, and so on. The graduated rule thus indicates at once the proper extension of the enlarger for a given degree of enlargement, and all that is then necessary is to thrust back the easel until the enlargement is in sharp focus. The size of the enlargement will then be almost exactly right.

This plan works all right for moderate degrees of enlargement such as one customarily does oneself for portraits, enlargements that are up to 3 or 4 times. But if a greater degree of enlargement is being carried out is not a reliable guide to the correct placing of the easel. A glance at the diagram will show why it is

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not accurate. It will be seen that the marks representing anything over five-times enlargement (that is the marks representing fractions of the focal length smaller than a quarter) come very near together, and a very slight error in setting the extension of the enlarging lantern makes a very great differenc as regards the position which the easel must have therefrom as regards the size of the enlargement. But, fortunately, for these greater degrees of enlargement there is a very simple and equally rapid method, and one which is quite accurate. It is first to set the lens of the enlarger at about 1⅛ focal length extension (distance from negative to lens), and then, before doing any focussing or viewing of the enlargement on the easel, to set the easel in position by means of the "focus-rule." Here we follow the same principle set forth in a previous paragraph. For example, for a six-times degree of enlargement the easel should be seven focal lengths from the lens; for an eight-times degree of enlargement, nine focal lengths, and so on. It will be understood that the exact position of the lens in relation to the negative does not matter appreciably so long as it is set just a little over one focal length. On placing the easel in position as just mentioned, the enlargement will be obtained of the right size on operating the focussing pinion.

Camera Extension in Terms of Focal Length

All this, no doubt, sounds formidable in print. In actual work it is the simplest thing imaginable, a real time-saver, and, in fact, calling for no personal explanations on the part of the principal because you can easily draft all the instructions for its use into a few sentences which can be written clearly and nailed up somewhere where the assistant can see them. It would say also how greatly any kind of calculation connected with camera extension is simplified by "thinking in focal lengths." Take, for example, the fitting up of a camera to a window for daylight enlarging. Many professionals, in taking up enlarging work themselves, install an apparatus of this kind, purchasing an old-pattern camera for the purpose. The exact way in which it should be fixed and the extension which it requires to have are seen in an instant if one figures out the distances in terms of the focal length of the lens which will be used. The rule which I have mentioned tells us that for a same-size "enlargement" the distance from negative lens is two focal lengths. Therefore, two focal lengths is the maximum distance which one requires to get between the negative and the lens-stop, unless one is likely to require to make reductions with an "enlarging" apparatus. For the greatest degree of enlargement which could possibly be required the extension of the camera would be one focal length, so that a range of movement in the way of extension which is the same as the focal length of the lens employed is ample for all purposes. If one will not be wanting to enlarge upon a lesser scale than two-times, then the maximum extension called for in the camera is one and a half focal lengths and the range of focussing movement only half a focal length.

Studio Distances

And perhaps before I leave the subject I may refer to the usefulness of the same system in enabling one to work out in one's head just what focal length is necessary in a portrait studio according to the particular kind of work which it is required to do. Here, again, it is nothing more than the copying of the human original upon a scale of reduction which necessarily varies according to the size of the picture, and according to whether we are taking a full-length or a head-and-shoulders. To give definiteness to the use of the system for this purpose, let us say that the space occupied by the portrait of the person in a carte-de-visite photograph is 3 in.; in a cabinet or postcard, 5 in.; in a boudoir size, 7½ in.; and in an imperial, 9 in. These figures are pretty close to the working conditions in every-day portrait photography. Now the degrees of reduction

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in photographing a person down to these various sizes are as follows:

	Carte	Cabinet	Boudoir	Imperial
Full-length portrait .	24	13	9	7½
Head-and-shoulders .	10	6	4	3

If you make a note of these figures you will have no difficulty in figuring out for yourself whether a lens of a certain focal length is short enough in focus to be used in a studio of a given size. For, remember that the chief distance is that required between the lens and the subject and is always as many focal lengths as the degree of reduction, *plus* one more. For example, in taking full-length carte portraits with a 6-in. lens the distance from lens to subject is 25 multiplied by 6 in. = 12½ ft. In addition to that you have to allow for space behind the sitter, say, 3 ft., the space of the camera, say, two focal lengths at the outside. and the space behind the operator, say, another 3 ft. Therefore, in seeking to find out what is the longest focus of lens that can be used in a studio of 20 ft. length when making full-length carte portraits, first subtract 6 ft., leaving 14 ft., and then divide this distance (in inches) by the degree of reduction, plus 3, which gives us as a result, 6¼ in. That is not an absolutely exact calculation, but it is quite near enough for all practical purposes, erring a little in indicating a lens on the short side, so that one will not be led into the mistake of choosing a focus which is too long for the purpose. Nevertheless the method indicates, aside from this small departure from exactitude, the longest focus which one can employ, and it is not necessary to point out here that usually the longest permissible focal length is the best choice.—*British Journal of Photography.*

NOTES ON PORTRAITS OF MEN

By C. H. HEWITT, F.R.P.S.

THE enthusiast in portraiture, be he professional or amateur, rarely loses an opportunity of getting an idea either from some exhibition of paintings, a book of engravings, or an odd portrait in a shop window. The fortunate dweller in the metropolis has many chances for this kind of study to the one chance which comes in the way of the provincial worker. Many of us get to London once in two or three years. But, thanks to process work and the enterprise of publishers, there are today many records available of our principal picture shows. One of these I have been turning over and studying at odd moments during the past few days. So far the portraits only have had my attention, and particularly the portraits of men. This is not from any lack of gallantry. It is much more difficult to make a good, strong, characteristic portrait of a man than to make an easy, graceful portrait of a lady. And so, in mentally attacking an ever-recurring problem, one naturally turns to the men's portraits for suggestion.

I have made rough outline sketches of five of the portraits. One is at once struck with the number of pictures in which uniform official robes or academic gown are worn, and it is not difficult to see how great a help these are in making the picture. Difficulties there may be, of course, in connection with the color schemes; but for the moment we are concerned only with line and light and shade. In sketch No. 1, the lord mayor's portrait, by A. S. Cope, A.R.A., we see how the robes have enabled the painter to avoid the long straight-up-and-downness which is so awkward in full-length portraits. The hand placed on the hip not only gives width

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to the figure by holding off the robe, but it also shows the dress beneath the robe, and prevents the awkward appearance similar to cyclists' knickerbockers under an overcoat. The endeavor to give the width to the figure is skilfully carried still further by the chair on the left. Another point strikes one with reference to this position of the right arm. In an



Fig. 1.

historical painting, such as one presumes a portrait of the lord mayor for the coronation year may become, it is well to have the details of dress accurately and closely rendered. The detail is carefully given here, but without producing any effect of spottiness. The art conceals the art, and one has to think to find the reason for this. It is, perhaps, that the bright parts of the robes are drawn more or less to the side, leaving the centre of the picture a large mass of dark. Close beside this mass of dark is another of light—the paper under the mace. This light prevents any effect of spottiness in other parts of the picture. In Fig. 2, Seymour Lucas' portrait of Mr. Justice Swinfen-Eady, the hands appear as characteristic as the face. The firm grasp they have of—is it a paper or part of the robe?—is worth noticing. I always like to include hands in a picture if they show any character worth recording. I have often noticed how much better an expression may be secured where the head is on one side, as turned to the camera. But, unfortunately, one's sitters so often say, "I don't like that—the head isn't straight." There are a few people, of course, who have observed that the head is almost invariably so turned, and that, in fact, it is quite the easiest way of turning it, which accounts for the easier and pleasanter expression—the movement is natural and the head comfortable when brought to rest. The little glimpse of Westminster seen past the pillar and curtain introduces a light in just the right place to somewhat break the strength of the horizontal line the ermine edge of the robe makes right across the picture.



Fig. 2.

Sketch No. 3 is of Sir G. Reid's portrait of Professor G. D. Liveing, F.R.S., hung at the New Gallery. The light is concentrated on the central part of the painting—head, coat, hands, and book. The gown is of great service in preventing awkward lines, and in giving strong masses of shade to parts of the picture where detail is not required, and where, indeed, it could only be detrimental. I am often inclined to wonder why men who wear overcoats with capes do not keep them on when sitting for their portraits. Carefully treated, portraits so taken might be given an appearance of distinction. In this portrait, again, the hands are carefully arranged, and their individuality is apparent. I am struck by the fact that this picture is arranged in one plane, almost as if for photographing. In fact, with a lens of reasonable focal length

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the hand and forearm on the back of the chair should not be out of proportion to the rest of the portrait.

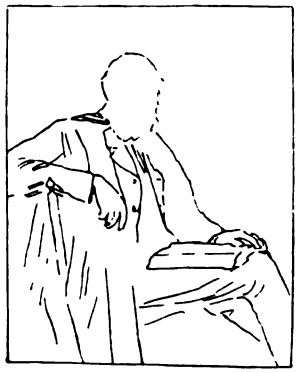


Fig. 3.

Looking at these portraits, one recalls the observation sometimes made, that there should be sufficient head-room to allow for the figure to stand up in all sitting pictures. This is not the case in any of the sitting portraits I have given outlines of, and I do not think they suffer on this account. It is, perhaps, as well to keep the figure low down on the print when trimming such a photograph. In most painters' portraits there is rather more of the lower part of the leg than a photographer generally includes. Possibly this, in a painter's hands, improves the "lines" of a portrait. Fig. 5, for instance, a portrait of Sir R. Douglas Powell, shows almost the whole figure, and is, I think, more dignified than it would be if trimmed off just below and to the right of the hands.

It is interesting to know how the artists fill up the backgrounds. In Fig. 5 a picture is hanging on the wall, while a similar corner in Fig. 4 is filled up with a vase of roses. Fig. 4, a portrait by Sir L. Alma-Tadema, is a capital lesson for a photographer. The sitter is in ordinary, every-day dress, but not a new suit. The coat has lost its original straightness, and has taken on part of the individuality of the wearer. Why do so many of our sitters prink themselves up before coming to the studio? Then the pose is comfortable, and, in consequence, the sitter appears easy and at home. The chair is a luxurious one. I know that there are objections to photographing sitters in a low chair; but this one is not very low, and such a

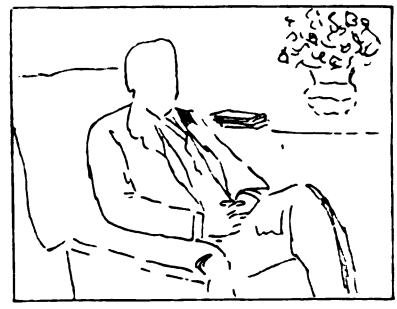


Fig. 4

chair would make a pleasing change after the many forms of carved, wooden, and partially upholstered seats. Even the cushion at the back increases the effect of comfort. Were this a photograph with someone's name on the mount I

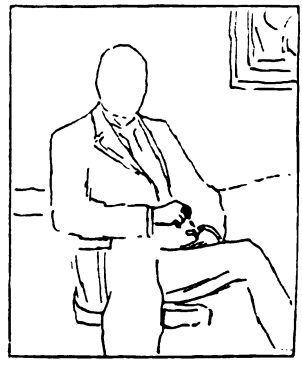


Fig. 5.

could imagine the sitter's friends saying, "If I can be photographed as comfortably as that I shall go to Mr. ——'s." Referring again to the vase of roses on table, it is curious how little flowers and foliage are used in photographs of men. When they are, the effect is seldom good. I remember a photographer of ability showing me a negative of a man in which either a plant or some flowers—I forget which—appeared, and remarking that the sitter only needed a fan in his hand to complete the thing!

There is no reason why such a portrait as this should not be produced in any ordinary room, if of fair size. The light-

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ing is simple and direct, and the accessories are few and ready to hand. The chair and cushion should not be too light, and care must be taken that no light objects appear in the background. It would, I believe, be an excellent exercise to endeavor to imitate this portrait as closely as possible—simply, of course, for purposes of study. A print could then be compared with the half-tone block in one of the illustrated reviews of the R. A., and its faults noted, afterward making a second and even a third attempt. Such a course would, I believe, be more helpful to an earnest worker than production of scores of heads taken in imitation of third-rate commercial portraits.—*Amateur Photographer.*

EXPERIMENTING FOR A REPUTATION

ESTABLISHED photographers do very little experimenting as a rule, and then it is, to a large extent, of an imitative nature. It may be a new paper or a new process for sepia. Such experiments are necessary and are frequently undertaken under the care and guidance of a demonstrator. Quite often it is done grudgingly and under protest, as though it were a waste of time to try a new idea. The demonstrator is permitted to go through the motions and get the results, and his work and his product are judged by the results, which are critically examined from a financial standpoint.

This is a natural development of our commercial methods, and it may possibly be due somewhat to the manufacturers, who have adopted the method of sending demonstrators over the country to show the average photographer how to properly use their product. It has gradually grown into a habit of taking the initiative from the photographer and transferring it to the manufacturer and his agents. True, it relieves the user of some time and work, and possibly trouble and failures. At the same time it makes him more dependent on the demonstrator and less able to intelligently know whether the demonstrator is teaching something really worth while or is merely trying to sell something of doubtful merit. If a photographer has been bitten on a new product that has not been a successful money maker, he becomes suspicious of every new thing that is shown him, and he is inclined to stick to the old ways and not pay any attention to the new. This is digging a rut and getting down into it. There are plenty of ways in which a photographer can make profitable experiments, in spite of the demonstrator, and, if one does not spend too much time at it, the results are always profitable. It is necessary to exercise temperance, however. The person who does nothing but experiment has a hard time to make a living, while the fellow who never experiments has equally as hard a time. Whatever will arouse a desire to get out something new and different will be valuable to the photographer.

In the showcase there is an opportunity to try out the practical value of the experiments, and there it may be learned whether it will bring actual money reward. In the way of attractive showcase experiments for purely advertising purposes might be mentioned the various trick pictures that the ordinary passerby will stop to examine and guess how it was done. These pictures are always attractive and add materially to the reputation of the local photographer, especially in the smaller towns. We might mention such work as moonlight scenes, taken at sunset; distortion pictures, showing small articles to be of impossible size; ghost or dream pictures, made by means of double exposures or double printing; night photographs or grouped copies of unusual merit or of seasonal interest.

These experiments attract attention to the skill of the photographer and are

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the best kinds of advertisement for his reputation as a workman. Frequently such efforts can be copied on post cards, and if they are a decided novelty they will have a large sale. But the unusual photographs pertaining to portraiture are valuable not only as an advertisement, but for the development of the skill of the workman in getting such work up. Examples of skilful retouching, where an eye is closed or opened, or an expression changed from pleasant to sour, or where a flower or ornament is put in are extremely impressive on the public. Several copies of the same photograph showing changes made by means of the knife and pencil will bring returns that will pay for all of the time spent on the work. Not only that, but the effort to succeed in such work will develop a degree of skill that will make the ordinary day's work seem like child's play, and the work can be speeded up so that, without much difficulty, a great deal more work can be turned off with less effort.

New papers for new effects are frequently of interest and value. However, care must be observed to refrain from gross inconsistencies or an extreme of poor taste. We remember to have seen a picture of a lady in a white wedding dress seated before a background representing a conservatory of plants and flowers and the picture was printed in scarlet-red color. Whether it was dyed or on an ordinary paper treated by some redevelopment, it was immaterial. The color might have been permissible for some subjects, but for a bride in a conservatory it damned the taste and judgment of the photographer to everlasting perdition. It may have been an experiment that had some value, but such a print should never have been shown.

Experimenting usually develops good taste, and it educates the observation and critical sense of the workman. When it comes up to the photographer to ask himself whether a thing is worthy or not, and then to show his results to his friends for the purpose of getting their opinions so that he may improve what is faulty, then he is in a fair way to show rapid improvement, not only in his work, but in his ability to tell whether his own work is up to standard or not.

It is easy to criticise another man's work, but often it is difficult to criticise one's own honesty. A photographer who is struggling for a reputation must make up his mind to try new things now and then and experiment wherever and whenever he has an opportunity. By following this plan he warms up the professional demonstrator, who will loosen up and work with him to develop some new idea. It stirs up the interest in photographs in everyone who comes into contact with the studio and it makes business. A photographer is never too old to experiment—that is, if he wants to keep ahead of the procession.—*Trade News.*

THERE is only one person who can mark you as a failure and that is yourself.

IT is as unwise to talk about your sucessses as about your failures.

EFFICIENCY means do a thing as well as you can with the least possible expenditure of energy.

IN every line of work the first principle toward success is the enjoyment of your work.

THERE is only one road to success and that is the straight road.

IT is as foolish to blow about your successes as about your ability.

STANDARDIZE your efforts by saying: "These are my best efforts for today."

MEDIOCRE men are plentiful but remember that able men are few and are therefore prized when they are found.

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THE MOTHER AND CHILD PICTURE IN PORTRAITURE

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

THE mother and child picture offers to the professional photographer one of the few opportunities to appeal directly to sentiment. Neither the infant, the old man or woman at the fireside, nor the married couple can arouse the sympathy of the outsider in the same simple and forceful manner.

The mother and child picture is apt to produce a purely emotional effect, and the better it does this the more satisfactory is the portrait as a picture. There are many ways of handling the subject.

The decorative way seems to be the least satisfactory. Neither Fig. 2 nor Fig. 4 seems to be the right thing. A Madonna composition always looks a trifle strained. It lacks naturalness of expression, and is at its best an imitation. The modern mother does not wear drapery, nor does she garb herself in some outlandish fashion, as Fig. 2. What most people wish to see is a sane, healthy, realistic representation, true to life and the poetry of motherhood. Any attempt at some highstrung estheticism will, in my opinion, injure the beauty of the subject.

The depiction of domestic incidents (Figs. 5 and 7) may be pleasant to look at, but story-telling never constitutes good portraiture. It is almost impossible to combine the two elements. Simple poses that express affection without laying any special stress upon it come nearer to the point (Figs. 1, 9, and 10). Fig. 9 is a charming composition, but rather too elaborate for ordinary studio exposure. The mother and child picture lends itself particularly to the methods of home portraiture. Fig. 10 represents a skilful attempt at an easy, natural pose. The poise of the mother is excellent, that of the boy a trifle awkward. Probably an exposure one second earlier or later would have produced a more satisfactory result. The background has been handled with less discretion than in Fig. 9, but it is well balanced. The three light spots of the jar on the bracket, the picture on the chair, and the vase of flowers brighten up the background and hinder the figures from looking like white silhouettes against a dark background.

Wilhelm Weimer's portrait (Fig. 1) is a good example of straightforward portraiture. In this portrait the rendering of likeness is the principal object, and not the expression of any maternal feeling and pride. I believe that most customers who go to a studio want something on this order. But it is not the best the photographer can give to a mother. It is too stiff and cold, and too regularly composed. Figs. 11, 12, 13, and 14 have a more cheerful and virile note to them. A mother and her child are, after all, not merely objects to be posed in a certain fashion to carry out a certain stereotype style of composition. Their relation to each other is one of the most sympathetic and practical phases of social life, and it should convey in every pictorial delineation some of its domestic charm and emotional wealth.

In this field truly are new laurels to win for the progressive professional, and the Dührkoop pictures, Figs. 11 and 14, show better than any others what might be accomplished in the domain of realistic mother and child representation.

In the composition of such pictures the placing of the two heads needs special consideration. There are only three ways possible: Either the head of the mother is placed higher or lower than that of the child, or on the same level. The latter is the least favorable. Also Dührkoop has managed it in Fig.

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9. By E. SCHNEIDER
10. By E. SCHMIDT
11. By R. DÜHRKOOP
12. By WOLFRAM & CO.
13. By HUGO ERFURTH
14. By R. DÜHRKOOP

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1. By W. WEIMER
2. By R. DÜHRKOOP
3. By W. LILL
4. By M. G. HUNTSMAN

14, by combining a profile with a full-face view. It is really the only way it can be done. Two full-face views on the same level, and two profile views, one larger than the other, would look rather absurd. In Fig. 6 we see the latter. In this particular instance, by showing the entire figures, by making them look out the window, and by treating the portrait like a story-telling picture, awkwardness has been avoided. But if the heads were seen alone, they would carry out my argument.

The head of the mother placed lower than that of the child we see in Figs. 3 and 11. Fig. 3 can hardly be called a good composition. Fig. 11 is much better by applying the V-shape to the position of the heads.

The most natural and generally accepted method of placing the heads is to place the head of the mother higher than that of the child. One feels that it should be so. Nearly all the illustrations carry out this idea. The nearer the heads are together the more affection will be expressed (Figs. 12 and 13). As soon as they are separated they show merely contemplation or some phase of momentary interest (Figs. 4 and 8), and only if the faces are turned toward each other. As soon as both heads are seen full-face all display of emotion ceases (Figs. 1, 4, and 5). The combination of a profile

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5. By A. KNAUTH
6. By E. BIEBER
7. By WOLFRAM & CO.
8. By E. BIEBER

and a full-face view is also here the most satisfactory one. Two profile views can only become interesting by introducing some story-telling element (Fig. 8).

If the accompanying pictures had been sent in for a competition, I would not hesitate long to award the first prize to Fig. 14. The second would go to Fig. 9, and the third and fourth to Figs. 1 and 12 respectively.

Fig. 1, in a way, is the best composition. It is excellent in spacing and line arrangement. Notice how the lace stars on the woman's dress help the position of the child's arm and help to balance the white dress and the lighter complexion of the little girl's face. It would be difficult to talk in the same analytical way about the other three pictures. There is less composition in them. The Dührkoops are even somewhat confused in their line arrangement. But they possess a greater charm. They are true to the sentiment that clings to the subject. They bring to us a personal message, a hint of the poetry of maternal love and the beauty of childish simplicity. And that is, after all, what a mother and child convey first of all—affection expressed through a realistic likeness.

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CHAPTERS ON PORTRAITURE

EXTRACTED FROM THE RARE AND VALUABLE TREATISE ON "PORTRAIT PAINTING," WRITTEN BY JOHN BURNET. PARAPHRASED AND CONDENSED FOR THE GUIDANCE OF ADVANCED WORKERS IN PHOTOGRAPHIC PORTRAITURE BY JOHN A. TENNANT

VI

HAVING now surveyed portraiture from a general standpoint, we may with advantage investigate the particular principles upon which it is based, beginning with the features in detail. The peculiarities of the mouth should first be noted, not that it is of more importance than the eye, but because from infancy to age it undergoes greater change than any other feature, and is at all times characteristic of individuality. In children the form of the mouth is rotund, with a hollow in the centre of the lower lip, and a depending peak in the upper one. The growth of the teeth and the alteration of the muscles produce an elongation of the mouth, until it finally assumes the form designated by the Greeks as cupid's bow. The change from youth to old age is a gradual alteration from full-curved lines to dry straight ones. In portraits of young women and children Reynolds used to slightly open the mouth, so obtaining a shadow between the parted lips, which gave softness of character to the feature and emphasized its delicate form. The outer corners of the mouth are points deserving of great care in their portrayal. In the antique we find the Greeks marked the termination full and soft, which, compared with the treatment of the Egyptians, who inclined to severity in lines, gives a much higher character to the personality of the sitter.

VII

Next to the mouth and of equal importance is the eye. This organ is slower in changing its appearance, and alters less at the different periods of life than the other features. The greatest alteration from infacy to youth is in the inner corner; from youth to old age in the outer corners, over which occurs the constant movement of the muscles of the upper and lower portions of the face, hence the production of wrinkles and markings. In the delineation of this organ must be borne in mind the delicate variety of outline, the lustrous brilliancy of the high light brought in contact with the dark pupil, and the thin thread of watery fluid trembling within the under eyelid, uniting the most elegant arrangement of form and chiaroscuro with the utmost delicacy of finish. To soften the harsh lines often observable about the eyes of old people, a muslin screen placed between the source of illumination and the face will produce, if properly managed, the most delicious gray and pearly tones over the shadows, changing the harshness into softness with sufficient character. In the portraits of Titian we see the greatest breadth and the dignity in the countenance. For example, in his treatment of the eyes, the pupil is made to merge into the outer line of the iris, which gives bulk and fulness of form; the upper and lower eyelids are extended by shadows almost to the eyebrows, the darks of which are carried out by union with and dependence on the line of shadow encircling the hair, thus making the extreme boundary of every feature its line of definition. This treatment of course is applicable to some only of the various subjects with which the portraitist has to deal. Generally speaking, the shadows about the eyes should be so disposed as to harmonize the features of the upper portion of the face, such as the eyebrows, cheek-bones, and the contour of the brow, which harmony may be studied especially in the portraits of Vandyke. The drawing and outline of the nose, as to its point and nostrils and their union with the upper lip, may also be studied with advantage in the portraits by this master.

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VIII

The ear, though not an intellectual feature, is yet an organ of great beauty, both on account of its elegant assemblage of lines, and those convolutions contrasting, yet harmonizing, with each other in a way so congenial to our idea of grace. The ears of children are rounder than those of adults, and less marked by hard cartilaginous portions. In portraits of women it is important to see that the ear conveys the natural idea of charm which is generally seen in the original. In this detail the portraits of Vandyke are unsurpassed.

When one side of the face receives the chief light the ear should be carefully modelled and illuminated to make it contribute grace to the portrait; the ear on the shadow side of the face should, on the other hand, help in the merging of the outline of the head into the surrounding shadows, and hence should be subordinated in its treatment. Except where it receives brilliant illumination, this feature should generally be left devoid of extreme finish, the principal parts only being emphasized, and the minor parts kept subservient.

IX

One of the essential stages of the education of the portraitist is that devoted to the close study of the works of master portraitists, his observation of the human figure as it is in life and in the statues and pictures left to us by the Greeks and others down to our time. In this he will receive a knowledge of the true elements of the portrayal of character—of the substance and essence of the individual—what is homogeneous—what is discordant—what is deformity and what beauty. The study of casts from antiques is therefore advised as to be taken up before the attempt is made to portray life subjects. To gain all possible advantage in this the student should copy by hand the best examples of the works of the early masters, so that he may gain a true knowledge of their mode of treating the subject in the arrangement of form and light and shade. After this when he handles the living subject under the light he will find himself able to recognize what should be emphasized and what subordinated in line and chiaroscuro, to the proper portrayal of the subject. The character of unaffected ease and natural grace imparted by Sir Joshua Reynolds to his portraits of men and women he acquired from his study of the actions of children, of whose habits he was a constant observer. In the portraits of Velasquez there is to be remarked a broad manner of laying out the head, and a certain squareness in the handling, by which he secured firmness and dignity in his subjects. This we may obtain by introducing dark shadows under the eyebrows, not permitting them to reach the under eyelid, but passing softly over the eye, enabling the high-lights to tell without disturbing the agreeable expression under the eyelid. This also prevents the nose from appearing too short, and, if the height of the sidelight is properly considered, a desirable distinction between the darkness of the upper and lower lip will be apparent.

X

It is now time to say a little regarding the background of a portrait, than which nothing is more important, both in the portrayal of a head or a full figure. In the portraits of the early Italian and Flemish schools the backgrounds form no connection with the head, but are in strong contrast as regards color and tone, thus giving the portrait the appearance of being inlaid. This fault prevailed until the time of Titian, who reversed it, melting and losing portions of his figures in the background, and repeating the tones of the portrait in its surroundings. Paul Veronese, in his works, enriches portraiture, compensating for the dryness of the figure by the doubling and repetition of the outline in the background. Vandyke's works also present some of the best examples of backgrounds we possess, using the forms of his accessories either to contrast the lines of his figures or to aid them by extension.

The portraitist must not be content with the introduction of forms and lines, such as a curtain or pillar, merely to con-

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WILLIAM C. HUBBARD, General Sales Agent
P. J. O'SHEA
W. A. D. EVANS } Cooper-Hewitt Electric Co.

By E. W. PARELL
(COOPER-HEWITT LIGHT)

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trast the lines of his figures, but he should inquire into the advantages of their combinations, adapting them to his purposes in each application, to give depth and variety of light, shade, and tone. Hence he should study what it is which will confer dignity, repose, or action to his portraits, whether a largeness of parts and vigorous treatment, or continuity of outline and softness of definition.

XI

In placing the sitter it is necessary to observe the head in different points of view, that the most characteristic view may be fixed upon and the modifications of light and shade essential to its proper rendering may be observed. In some instances the features are too powerful, in others too weak; hence the necessity of a knowledge of the best mode of treatment which can be acquired only by preliminary study of standard forms such as we have in classic portraiture. The hand also is of great importance in portraiture, as giving grace and suppleness when properly placed and lighted. The shape and character of the hand vary much both in men and women, according to their character and occupation, and the varieties existing in this or that condition should be studied and known. In portraits of women the early artists made the fingers taper and bend slightly, whereby they secured flexibility and grace. The graceful bending of the wrists, so great an aid in the artistic portrayal of the hands, should also be given careful attention. The disposition of light and shade here is of the utmost importance, so that the hands may have a natural look, and yet contribute grace and beauty, without, by expression of power or action, drawing attention from the head.

XII

We will now return to the first sitting for a portrait. It seems to have been an axiom with the great masters to place the sitter above the eye, as far as the countenance was concerned, without showing too much of the nostrils. The platform in the painter's atelier is seldom higher than two feet, and, as most painters stand at the easel, there is not much difference in effect. The position of the sitter and his relation to height of the easel (camera) must naturally depend on the character of the subject, that course being adopted which is most conducive to success. What is required is that the picture, regardless of its size, shall possess breadth of light and shade, the lights being well controlled, so that only the highest light be white, or nearly so, and the outline shadows melting away into the background.

XIII

In the treatment of the head much will depend upon the tone-depth of the background employed. The effort should be made to represent the complexion and general look of the head as viewed a little way off. This is effected by the background and the lighting. In most pictures of the head the light goes diagonally across from the upper corner to the lower, which gives strength when properly balanced and the greatest breadth of light and shade. In some instances, however, the whole space must be pervaded with light to give the desirable effect of repose. A common fault is the neglect of subordinating the white draperies to the head, which, as a rule, should somewhere show the highest light.

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LEAVES FROM MY NOTE BOOK

By an Old Hand

INTENSIFICATION

IF we never made mistakes in exposure or development we should never want to intensify a negative, but occasionally this becomes necessary.

Of all methods of intensification that with mercury is the most generally useful, and a stock solution will keep well in the dark. The most convenient solution is made with

Mercuric chloride . . .	20 gr.
Potassium bromide . . .	20 gr.
Hot water	1000 c.c.

It is as well to use distilled water, if possible, as the solution keeps much better.

The negative should be well washed, so that it is quite free from hypo, otherwise when placed in the above a white precipitate is formed in the film. The solution should be allowed to act till the image appears quite white when examined from the back. Frequently negatives developed with pyro present a distinct grayish image, instead of a white one, and only whiten on washing.

After bleaching, the negative should be well washed, either in about ten changes of water, with five minutes' soaking in between, or better still to use a 1 per cent. solution of hydrochloric acid in the same way. Running water may be used, of course, but the washing is not so efficient as repeated soakings.

There are various chemicals that may be used for blackening the bleached image, such as 5 per cent. solution of ammonia or sodium sulphite, but these do not give very much increase in density; an old developer may also be used. My favorite blackener is cyanide of silver, which is made as follows:

A

Silver nitrate	20 gr.
Water to	500 c.c.

B

Potassium cyanide . . .	20 gr.
Water to	500 c.c.

Add B to A in small quantities, shaking between each addition. A thick curdy white precipitate will be formed, but on further addition of the cyanide this begins to dissolve. Enough of the cyanide solution should be used to nearly clear the solution, but not quite. There must always be a little precipitate left in the solution. If there is not, then the solution attacks the image after blackening and begins to reduce it.

By this process silver is deposited on the white mercury-silver compound, and the process may be repeated two or three times if necessary. As silver is deposited it is obvious that the solution gets less rich in silver and the small amount of precipitate will be seen to gradually dissolve. It is advisable, therefore, to occasionally add a small crystal of silver nitrate to the stock solution, so as to form more precipitate. If this be done the solution may be used repeatedly.

After blackening, and this should be allowed to proceed right through to the back of the film, the plate should be well washed for about half an hour.

There are two possibilities of failure: The one is due to insufficient washing after bleaching, the other being due to the blackening solution being allowed to act too long. In the first case a yellow stain is caused in the film, which is extremely difficult to remove. In the second case the image is attacked by the cyanide and the increase in density is not as great as it ought to be.

There is a big howl raised by some people as to the poisonous nature of mercuric chloride, or, as it is also called, perchloride or bichloride of mercury. It is poisonous if taken in sufficiently large quantities by the mouth. But it certainly is not poisonous enough to do the slightest harm by absorption through the skin or a cut. It is probably well known that it is one of the most generally used antiseptics for open wounds.

To those who want a variant the following will be found quite satisfactory:

Potassium bichromate .	10 gr.
Hydrochloric acid . . .	2 c.c.
Water to	1000 c.c.

The negative rapidly bleaches in this and should be well washed to remove the yellow stain and then redeveloped with any developer, without bromide, though amidol or hydroquinone give the best results.

Uranium intensification is very rarely of any practical value, only in the case of real ghosts of negatives. This gives a brown or reddish image and the gelatin is always also stained, so that the negative takes a long time to print. Very little change of color of the original gives

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great intensification by this method. The formula is

Potassium ferricyanide	10 gr.
Glacial acetic acid	10 c.c.
Uranium nitrate	10 gr.
Water to	1000 c.c.

After intensification the plate should be allowed to stand in a dish of water for about ten minutes, and then fresh water applied and this repeated twice. Running water must not be used. The yellow stain can be removed from the gelatin by a 2 per cent. solution of ammonium sulphocyanide.

ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Black Surfaces

J. McIntosh describes his attempts to obtain a dead-black surface for microscopic work. Printers' brass rule, four to pica, or one-twenty-fourth inch thick was tried. The metal was boiled in caustic potash solution to remove grease and dirt, then in a 5 per cent. solution of potassium cyanide to remove tarnish. A matt surface is obtained with

Sulphuric acid	3 parts
Nitric acid	1 part
Water	4 parts

This should be allowed to act for a short time only or the surface becomes too rough. Platinum chloride gives a very good black but is too expensive.

A good stain is:

Hypo	½ oz.
Lead acetate	¼ oz.
Water	10 oz.

Heat the water to 200° F., add the acetate, and when dissolved add the hypo; allow the precipitate to settle or filter out. For use heat to 200° F. and immerse the brass, which turns first a golden brown, then purplish brown, then lavender, and finally a steel gray.

Tinfoil, one-five-hundredths of an inch, was found suitable. Glass slips were coated with gold size and the excess drained off, and when the size had set the slip was warmed and the tinfoil pressed into contact. The surface should be cleaned with a little ammonia, chalk, and alcohol, then rinsed in water, gently swabbed with a 5 per cent. solution of nitric acid, and transferred to

Antimony chloride solution	1 part
Water	9 parts
Hydrochloric acid	q. s.

Add sufficient acid to dissolve the yellow precipitate. The metal at once turns velvety black, and if markings appear the operation can be repeated. A still finer grain can be obtained by diluting the above to 2½ or even 1 per cent.

In the discussion that followed this paper numerous suggestions were made; for a glossy surface black sealing-wax dissolved in alcohol was used. For mounting diatoms, etc., a solution of gelatin, 2 grains to the ounce, is employed; the glass being coated with this, allowed to set, and then breathed on.—*Phot. Jour.*, 1916, p. 136.

Intensification with Mercury Iodochloride

Welborne Piper suggests the following formula:

A	
Hot water	200 c.c.
Mercuric chloride	10 gr.
B	
Cold water	50 c.c.
Potassium iodide	1 gr.

Add B to A in small quantities, shaking between each addition until the solution becomes clear, heating further if necessary. When perfectly cold a little red precipitate will separate out, which must be removed by filtering. This is used as a substitute for mercuric chloride and in precisely the same way. It gives a gravish image instead of a white one. After treatment with ammonia or sulphite the image is of a brownish hue in the lighter tones, but after washing turns black.—*British Journal of Photography*, 1916, p. 249.

A Test for Metol

Make a 1 to 20 solution in water, add a little sulphuric acid, cool by adding ice, and then add with constant stirring enough strong solution of soda nitrite to make the mixture smell of nitrous acid. If the substance is metol, a mass of fine needle crystals separates.

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Society of Federal Photographers Observes First Birthday

The first anniversary of the Federal Photographic Society was celebrated last month. Addresses were made by Prof. L. W. Beeson and Thomas W. Smillie. Mr. Smillie was elected honorary president of the association for life.

Other officers chosen were: Herford T. Cowling, Interior Department, president; L. W. Beeson, honorary vice-president; A. M. Linsenmeyer, Interior Department, vice-president; E. L. Crandall, Agricultural Department, corresponding secretary; L. W. Kays, Navy Department, secretary; A. A. Ruark, Agricultural Department, treasurer, and J. F. Bishop, and J. C. Carter, of the Agricultural Department, and E. S. Ship, of the Interior Department, board of directors.

The Sixty-first Annual Exhibition, Monday, August 21, till Saturday, September 30, 1916, at the Gallery of the Royal Society of British Artists, Suffolk Street, Haymarket, S. W. London

The Royal Photographic Society's Annual Exhibition is intended to bring together a thoroughly representative collection of all that is best in pictorial, scientific and technical photography, and the Council hopes that this prospectus will be accepted as a cordial invitation to submit new and distinctive work under these heads. The exhibition is international in character, and is open to members and non-members, professionals and amateurs alike without distinction. The Council will welcome the friendly coöperation of photographers, at home and abroad, in its efforts to make the forthcoming Exhibition a worthy successor to those which have preceded it, and a true reflection of the present position of photography in all its branches.

A New Field for Professional Photographers

To make a living nowadays business and professional men alike must be ready to seize every opportunity that presents itself; in fact, it is necessary to do more than this, for one must go and look for the opportunities. A new and profitable source of revenue to a photographer who possesses a little business push as well as skill in the use of a stereoscopic camera presents itself in connection with a certain class of manufactured products.

Travellers in the engineering trade carry photographs of the machines they wish to sell, the product itself being obviously too large and heavy to carry in a sample bag. But as every engineer knows, an ordinary photograph gives but a poor idea of a complicated piece of mechanism. The prospective customer wants to look *into* the machine, not merely *at* it. The stero slide supplies the solution of the difficulty. Armed with a neat collapsible steroscope and a set of stero prints prepared with a view to exhibiting the principal "talking points" of the product, the commercial traveller finds no difficulty in demonstrating the excellence of his wares. The effect of solidity and reality in the stero print is often worth half an hour's talk by the salesman.

This method of illustrating a bulky product has been used, to the writer's knowledge, by a firm here with most excellent results, and should therefore be worth the attention of photographers in manufacturing centres. It is particularly applicable to the illustration of machinery, especially machines that are both bulky and complicated, such as lathes, automobile engines, gas, steam and petrol stationary engines, as well as railway rolling stock. Very delicate art products may also be mentioned.

Many manufacturers would also be glad of a means of showing pictures of their factories and the details of manufacture more efficiently than is done by the ordinary photograph.—*Photographic Dealer.*

The Southern California Camera Club

A rapidly growing association of amateur, professional, and scientific photographers is located on the fourth floor of the Lyceum Theatre building, Los Angeles, California, and is equipped with large studio, and skylight, dark-rooms, exhibition-room, etc. If manufacturers of photographic apparatus and supplies will supply them with catalogues and trade literature of various types as issued they will be filed for the

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convenient use of the hundred members and guests. Send to W. C. Sawyer, Chairman Library Committee, 626 South Hope Street, Los Angeles. Arrangements for demonstrations may be made by addressing Hal G. Hall, Secretary, Box 104, Station C, Los Angeles.

New Goods

The Folmer & Schwing Division of the Eastman Kodak Company announce a new apparatus which will be of interest to the profession—the Crown Printer.

The Crown Printer affords great efficiency in a thoroughly substantial and practical printer for professional use.



The pressure pad is operated by a hand lever, controlling an automatic switch, which permits full pressure on the pad before the light is turned on. It also allows the light to be turned off automatically before the pressure on the pad is released, avoiding any blurring and assuring absolute contact of the print, irrespective of thickness of negative or paper.

A locking device relieves the operator of the necessity of maintaining the pressure on the lever during the exposure, while a slight pressure on the release catch unlocks the lever and ends the exposure.

A locking device also turns on the white light while pressure pad is elevated to permit adjustment of masks or vignettes.

A sliding frame in left side of printer carries a sheet of opal glass which gives perfect diffusion. Drop shelves on either side of printer, measuring 12 x 15 inches on the 8 x 10 and 13 x 20 inches on the 11 x 14 printer afford ample space for paper, negatives or exposed prints.

The light box in the 8 x 10 Crown Printer is constructed to carry one ruby and four white lamps and the 11 x 14 to carry one ruby and six white lamps. The printers are designed to take the 100-watt Mazda C (gas filled) incandescent lamps.

As the white lights are turned off, except during the period of exposure, the printer is very economical to operate. A switch turns off all lights when printer is not in use.

The No. 1 Crown Printer, 8 x 10, is 30 inches high and occupies a floor space 15½ x 17½ inches. The No. 2, 11 x 14, is 30 inches high and occupies a floor space 20 x 22½ inches.

The price of the No. 1 Printer, without lamps, including one sheet of flashed opal glass and six feet of conductor cord, is $24.00. The price of the No. 2 Printer, equipped as above, is $33.00.

Anthracite Section

An enthusiastic meeting was held May 4 in the photographic studio of Llewellyn Davies, Wilkes-Barre, Pa., by the following members of the Professional Photographers' Association of the Anthracite Section: From Scranton—J. B. Schriever, Michael Biekszа, W. B. Bunnel; from Pittston—Frederick Hummler; from Kingston—Joseph Tureck; from Wilkes-Barre—Joseph Stearns, A. P. Shukis, M. S. Wildermuth, and Llewellyn Davies.

The members listened to an interesting report on the recent convention of the Middle Altantic section, held in Washington, D. C. It was also decided that a public exhibition of photoraphs be held some time this fall in Scranton or Wilkes-Barre. Several new members were elected and then the following officers were elected for the ensuing year: President, Joseph Stearns; vice-president, W. B. Bunnel; secretary, Frederick Hummler; treasurer, M. S. Wildermuth; trustee, F. W. Hornbaker.

Incorporation of Photographic Firm

Under the style of Frederick Pohle, Incorporated, a new firm has just been incorporated to do a general photographic business. The incorporators are Frederick Pohle, A. O. Titus, and Mrs. M. A. Pohle. The studio of the new corporation will be at 9 West Chippewa Street, Buffalo, the present studio of Mr. Pohle. Both men are well known throughout professional circles in the United States.

At the recently held national photographic convention at Indianapolis, Mr. A. O. Titus was selected as national demonstrator for artistic studio poses, expression, character study, and facial delineation. The critical committee of the convention also selected one of Mr. Titus's studies for permanent hanging in the M. Daguerre Memorial Institute's permanent exhibition.

At the recently held photographers' convention for the Middle and Atlantic States held at Washington, D. C., one of the studies by Frederick Pohle was selected by the convention for hanging in the permanent exhibition.

So both members of the new corporation have been deservedly honored by the highest tributes that are bestowed upon photographers by fellow-artists. Both Mr. Pohle and Mr. Titus have been sought by professional people who require the highest grade of art in their photographs. A large measure of success is sure to attend the new corporation.

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Improvements in Photographic Screens for Half-tone Work

This new patent relates to photographic screens for half-tone work of the kind which dispenses with opaque ruled lines or grainings, and which are made with surface formations or recesses which act in a lens-like fashion during printing, and thus break up the photographic picture. The surface of the film of the plate is provided with a great number of irregularly arranged, closely juxtaposed, alternate raised and depressed portions which preclude the formation of any set design throughout the photo-engraved plate, and is effective in refracting and projecting the light rays. Each of the reversely curved portions of the film, which constitute lens-like formations, has a focal distance of its own, and this focal distance is so nearly the same in all of these portions that all dots in similar tones will be substantially the same size, thus avoiding likelihood of dots being etched away, or lost during the development of the printing surface in a manner to interfere with the texture of the stipple. These conditions are the same whether the screen is used in direct printing or in making a screened negative in a camera.

Chemical Shortage and Cameras

While a serious shortage of photographic chemicals has developed as a result of the curtailment of importations since the war began, dealers say that they do not believe that an actual famine will arise. Domestic production of chemicals formerly brought here from Germany, which before the war was the large supplier of this class of goods, has attained considerable proportions, chiefly through the expansion of existing plants, it was stated, and for this reason the requirements of the motion-picture industry, which is the greatest consumer of photographic chemicals, will probably be taken care of without much difficulty.

Prices of the more important chemicals upon which photography depends have all advanced from 100 to 1000 per cent. since the war opened. Speculation has influenced the rise of prices to some extent, it was explained, but it is not an important factor in the market now, which is controlled by the lack of stocks with which to meet the demand.

The scarcity of chemicals has affected the photographic interests only insofar as it has been concerned with developers, merchants said. The Eastman Company, which supplies a large proportion of the films used in this country, has for several years maintained its own factories at Rochester, where sulphuric acid, ether and other materials required in the making of films are produced, while other film manufacturers are said to be in a like position.—*New York Journal of Commerce.*

A Precision Shutter-testing Instrument

A precision for testing photographic shutters should provide means of determining the rate of opening and closing of a shutter as well as the time it is open. By merely projecting an image of the shutter upon a drum or disk having a photographic surface and rotating at a known speed, the time of opening may be readily determined. This method is in common use in many shutter factories.

For precision testing it is only necessary to interrupt the beam of light by which the shutter opening is photographed. These interruptions should be of a high and constant known frequency, and the duration of each flash should be very much shorter than the interval between flashes in order to obtain sharp images of the shutter opening. The literature of photography is full of descriptions of apparatus satisfying the above conditions to a greater or lesser degree. The testing instruments of Abney and of Campbell and Smith, of the National Physical Laboratory, are by far the best of those described, but each of these was open to objections so serious that the design of a new type for apparatus was considered advisable. In this the interruptions are at the rate of 1000 per second to within a maximum error of less than one-half per cent., the duration of an exposure is but 1-30,000 second, while the whole instrument is simple and inexpensive and easy to operate.

In the apparatus described the illuminating beam is reflected from a crown of twenty plane mirrors rotating at fifty revolutions a second. A small projection lantern supplies the light used, the condenser of the lantern focussing an image of the arc crater at the mirror surface. The reflected beam falls on a simple lens, behind which the shutter to be tested is held in a universal iris holder. An image of the shutter is formed by a small camera lens (90 mm. E. F. L.) on a band of cinematograph film (negative) attached to the rim of an aluminum wheel 12 inches in diameter. This wheel, just before the shutter is snapped, is set in rapid rotation by means of a crank and gearing. It is enclosed in a light-tight box, so that wheel and box are readily lifted from the machine and taken to a dark-room for loading and development.

The crown of mirrors is rotated at a very constant speed by means of a Leeds-Northrup governed motor making 1200 revolutions per minute. For determining speed, the shaft of the mirror crown carries a worm, and a single gear is arranged to be easily thrown into mesh with this. The revolutions of the gear-wheel are counted with a stop-watch.

The duration of each flash is determined by the angular width of light beam at the lantern condenser. The beam at this point is limited by a vertical slit 2 mm. wide. The width of the beam as it flashes by the shutter opening is about one-thirtieth the distance between flashes, hence each exposure is about 1-30,000 second. Sharp shutter images were obtained even with film speeds so high as to give completely separated images of shutters fully open.

The three feet of film can take only about fifty shutter images without serious overlapping. To record shutter speeds of $\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{2}$, and 1 second, the image is restricted to a narrow band by inserting a 1 mm. slit close in front of the moving film. To save counting the hundreds of images obtained at slower shutter speeds, one of the twenty rotating mirrors was painted black, thus rendering the shutter images in blocks of twenty. —*Research Laboratory, Eastman Kodak Co.*

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THE WORKROOM

By the Head Operator



SPECIAL MANIPULATION OF BROMIDE PAPER
DEVELOPMENT IN THE TROPICS
TANK DEVELOPMENT OF CARBON PRINTS
SPOTTING GLAZED PRINTS
UNMOUNTING BROMIDE PRINTS
INTENSIFYING BROMIDE PRINTS
PRESERVATIVE FOR ALBUMEN PAPER
CRACKED NEGATIVES
COMBINED TONING AND FIXING BATH
ONE THING AT A TIME
SYSTEM FOR THE PHOTOGRAPHIC STUDIO
HOW TO KEEP BUSINESS
ARTIFICIAL LIGHTING FOR MOTION-PICTURE STUDIOS
PREPARING THE NEGATIVE FOR ENLARGING
QUALITY AND CONTRAST IN BROMIDE ENLARGEMENTS
TRANSFEROTYPE PAPER
REMOVING GELATINE FILMS FROM CRACKED NEGATIVES
SYSTEM IN THE EXPOSURE OF ENLARGEMENTS
LOOK INSIDE YOUR CAMERA
PHOTOGRAPHS IN RELIEF
LET THE BUYER BEWARE
COMBINATION PRINTING
HOT WEATHER ADVICE
AN EASILY MADE REPEATING BACK

SPECIAL MANIPULATION OF BROMIDE PAPER

A GREAT many prints will be considerably benefited by special manipulation, either printing in dense parts of the negatives to bring out fine detail or clouds, otherwise lost, or to secure more strength and character. Part of your negative may require less light, which is accomplished by shading during exposure, to prevent this part from becoming too dark. This may be done by means of a small round piece of cardboard, one-half inch in diameter and upward, depending on the size of the place to be shaded. This should be attached to a very fine, stiff wire. During the exposure hold this between the lens and easel and keep in motion, shading the part of the negative which is too thin. The exact amount of shading necessary will vary with each negative and will be determined by experience. When negatives have places which are too dense and require extra printing, cut from a piece of thin cardboard a small hole not more than one-fourth the size of your image on the screen. The carbdoard must be large enough when held quite near the lens to cover the entire picture on the easel. After the exposure has been made in the regular way, inroduce the card, allowing the light to pass through onto the spot requiring the extra printing. Keep the cardboard in gentle motion to prevent any distinct lines from showing, and hold quite near the lens, that the edges may be entirely diffused. If clouds are in the original negative, but are too dense to print up with the remainder of the image, cut a piece of cardboard to the rough outline of the skyline and then serrate this edge. After exposing in regular way, continue the exposure long enough to bring out clouds, using the cardboard to shade the landscape. Keep the cardboard in gentle motion to avoid harsh lines along skyline. The cardboard should be held a little above the horizon for the best results.

In case of plain skies, clouds, when desired, may be printed in from another negative by employing the serrated mask. After making exposure in regular way, place orange cap over lens and mark bromide paper with pencil at each side to indicate location of horizon. Then substitute cloud negative in carrier and place to bring cloud effect where desired, shading landscape portion with serrated cardboard.

A little extra manipulation as above described will greatly benefit any negative. Very few negatives are too contrasty to make good prints when given full exposures, but sometimes very thin or flat negatives can be considerably improved by the means of printing through thin yellow glass. For this purpose an ordinary light filter or ray screen works well. This will prolong the exposure and increase the contrast.

When it is desired to enlarge one figure out of a group, this can generally be accomplished by vignetting. Sometimes the negative can be "blocked out," by painting with opaque water color (which may be obtained at any photographic store), leaving only the figure to be enlarged. After enlarging, the "opaque" may washed off the negative. This will leave rather rough or irregular edges and a somewhat crude and unfinished appearance in some cases, while the vignetting process will gradually blend from the picture down to the pure white. This is accomplished in about the same manner as the printing—in process already described. First cut from a piece of cardboard an opening about the same shape as the figure which is to be enlarged. This should not be more than half the size of the desired enlargement. This opening can most easily be made by first drawing the easel near to the lens and getting a small image. Trace the outlines on a piece of cardboard and cut the opening according to the sketch. Then draw the easel out and focus to proper size and use the opening cut in the cardboard as near the lens as necessary to get the proper diffusion. Keep in gentle motion during exposure.—*The Radion Book.*

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Development in the Tropics

In fourteen years' practice of photography under various trying conditions in tropical countries I have experimented with many methods of development, adopted in order to overcome the tendency of dry plates in these countries to show chemical fog. No method has proved to be so useful in practice as one based upon the making up of a standard formula and using it for a given time at a given temperature. While pyro-soda is an excellent developer for all classes of outdoor work, it readily gives very strong contrasts, and, therefore, I found a metol-hydroquinone formula to be far better on the whole, yielding exceedingly clean negatives, keeping well, and affording the softness of contrast that is required in artistic portraiture. In the formula given below the time of development runs to about fifteen minutes, but though the process is slower than others, it is a most certain one, and exceedingly good in the rendering it gives in the negative of draperies and dresses, as well as of foliage and other middle tone in landscape work. Too often it is found, in the case of negatives exposed in the tropics, that excessive development gives the same tone to half-tones as to the highest lights, with the result that the negative is harsh and lacking in harmony. The following method has been proved to respond admirably to the conditions which workers in tropical countries experience.

As regards temperature, in almost any country water at 70 deg. Fahr. can be had. If ice is not available for this purpose an earthenware vessel of water left out at night in the dew will, even in the hottest climate, be found to contain water not exceeding 70 deg. in temperature the following morning. The formula for the developer, to be used in a tank, is as follows:

Metol	18 gr.
Hydroquinone	36 gr.
Soda sulphite, dry	270 gr.
Soda carbonate, dry	180 gr.
Potass. bromide, saturated solution	25 drops
Water	69 oz.

The chemicals should be dissolved in lukewarm water, and cold water then added to make the full amount. The plates are placed in the tank, the solution poured in exactly at 70 deg. F., slowly to avoid air bubbles, and allowed to act for fifteen minutes. Developer is then poured off and clean water poured in, after which the plates are fixed in a hardening-fixing bath, made as follows:

Water	30 oz.
Hypo	8 oz.

Dissolve fully, and add the following solution:

Water	4 oz.
Alum	¾ oz.
Soda sulphite	¾ oz.
Acetic acid, No. 8	½ oz.

After development the plates may be removed from the developer in subdued daylight without any risk of fog.

The developer itself yields a thin superficial film of hardened emulsion, while the use of the fixing bath given above further increases the hardness of the film to such an extent that there is no necessity to use formaline, nor to observe any special care in the temperature of the wash-waters.

At present I am using a tank measuring (inside) 10 by 9 by 5 in., with sixteen grooves in the 10-in. length and six in the 5-in. width. Thus it holds sixty-four 5 by 4 plates placed glass to glass, a second row of pairs being inserted in the upper half of the grooves. The tank will also take thirty-two 7 by 5 plates, two in each groove, or twelve 10 by 8 placed in the 10-in. grooves. The tank requires to be of hard wood, well varnished with a mixture of asphaltum, ½ oz.; benzole, 10 oz. In order to make myself quite clear I would add that the tank is a little over 9 in. in height, and thus allows of two tiers of 5 by 4 plates being inserted one above the other. I fit a light-tight cover, which makes the use of a dark-room unnecesary once the plates have been inserted in the tank. It is claimed for the method that it enables one to deal with a large number of plates, obtaining the finest results without having to pay special attention to the climatic condition. The essential to success is to have the temperature of the developer as directed and to develop for the required time.—*British Journal of Photography.*

Tank Development of Carbon Prints

If a couple of dozen carbon prints have to be developed at once the following is a very satisfactory method: Suppose the size of the paper upon which the tissue is mounted is 12 x 10, then 12 x 10 plates are taken and rubber bands stretched over each end. Under these the prints are slipped, the band crossing the plain margin of the paper, of course. The plates are dropped into wood tanks with wide V grooves, two in each groove, back to back. The tissue being stripped, the prints can then be left to take their own time for development, and no fear of abrasion marks occurring from prints sliding across each other when the tissue is in a soft condition.

Spotting Glazed Prints

Every producer of highly glazed gelatine chloride and bromide prints has experienced the difficulty of satisfactorily spotting them without the work being afterward apparent. The method of applying the spotting before glazing by using oil color is not always satisfactory, and some work is almost always necessary after the cards have been stripped from the glazing supports. Steven's Ebony Stain dries with a surface that exactly matches the glazed surface of a print, and is an excellent spotting medium for this class of print. Although called "ebony" and, generally speaking, living up to this description, in thin washes the color is rather a purple-brown, and as the touches of color used in spotting are very thin, it matches quite closely the customary purple-brown color of hypo-alum toning.

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Unmounting Bromide Prints

A series of bromide prints, finished in water-colors and mounted, was required on another style of mount, and it became necessary to unmount them without damaging the color or surface. After some thought it was accomplished satisfactorily by subjecting the *back* of the mount to the action of steam issuing from the spout of a kettle placed on a gas-ring. The lid of the kettle was temporarily luted on in order that no steam might be lost, and the water reached only so far as the opening of the spout inside. The mount requires holding quite near the orifice of the spout to receive the hottest part of the steam, and as soon as the adhesive shows signs of giving the print should be gradually pulled away from the mount, where the action of the steam has loosened it, and a fresh part submitted to the action of the hot steam.

Intensifying Bromide Prints

Bromide enlargements, and even contact prints, when fixed and examined in daylight, are sometimes found to lack just sufficient vigor to make a good quality print. If the enlargement is destined for toning, this is fatal to a good result, and weak yellow tones are inevitable. On frequent occasions I have used the following intensifier rather than go through the operation of making a second enlargement, and the print eventually has been quite satisfactory:

Potassium bichromate	100 gr.
Hydrochloric acid	200 min.
Water	10 oz.

Wash until stain has disappeared, or use an alum bath, then redevelop with an amidol developer.

Preservative for Albumen Paper

Albumen paper still lingers in use, though it is difficult to believe it, and preservatives are really now a greater necessity than when it was in constant use. I usually sensitize about a quire at a time, floating it on a 60-grain neutral bath. When surface dry, but while still damp and flexible, the paper is refloated on the back of the following solution:

Sodium sulphite	5000 gr.
Sodium bisulphite	1000 gr.
Water	100 oz.

The sheets are then fully dried, placed face to face, and rolled round a wooden roller until a firm, compact roll, is established. In this state the paper will keep perfectly white and fresh for weeks. No unfavorable action in toning results from the use of the preservative, as so often is the case when citric acid is used.

Cracked Negatives

These are familiar to us all, and the problem often and usually is to print them without the damage showing in the print. As a rule, the damage is confined to the glass, the film remaining intact, at least, for the time being. Take a solution of Canada balsam in xylol or benzole, place a thin glass rod in the bottle of balsam, and look through it by holding it against the light. If the portion of the glass rod that is in the balsam is invisible, the balsam is about right; but if it can be seen to the bottom of the bottle the solution is too thin, and the solvent must be allowed to evaporate. Having obtained the solution of the same refractive index as the glass, gently open the crack and fill it with the balsam; close it by laying the negative film down on a level surface. Pour a small pool of balsam on one end of the negative as it lies glass side uppermost, then gently lower a piece of thin, clean glass in such a manner as to drive the balsam to the other end as the glass is lowered. Place in a slow oven to harden.

Combined Toning and Fixing Bath

The only argument that can be urged against the use of a combined toning and fixing bath is the well-known charge of impermanence. This, I am convinced, has been too much insisted on. Three or four years ago, after careful experiments, I threw over the use of separate toning and fixing for postcard work, and have had no cause to regret doing so. The results are every bit as good as with separate toning—indeed, with some brands of cards, better; the time saving in the course of the year enormous, and cards finished in this manner four or five years ago, exposed to a steady north light continuously for months, are still as bright and crisp as when first produced. The only change is that purple-brown cards have gone very slightly warmer in color. The bath used is:

Sodium hyposulphite	2½ oz.
Acetate of soda	½ oz.
Ammonium sulphocyanide	½ oz.
Gold chloride	3 gr.
Water	15 oz.

The average time taken to reach purple-brown with the cards I use is about ten minutes. Of course, care has to be exercised when using a combined toning and fixing bath that it is not overworked. I would consider the above quantity should tone and fix a little over a hundred cards.

One Thing at a Time

It is far better to do one thing well than to do half a dozen things incompletely. When there is a great deal to be done it is most natural that confusion results, especially if a strenuous effort is made to clean up the work quickly.

This is particularly true when applied to changes of business methods, and frequently greater loss is caused by improper management or conduct of a plan than any radical fault with the plan itself. Many a good idea has been sacrificed on the altar of inefficiency.

There is in the air a very evident awakening of business men to the necessity for plans and preparation for an improvement in business conditions. The feeling is here that there are opportunities approaching, and that those who are best equipped to take advantage of them will be the ones to profit the most. The mere thought that the other fellow may get more out of it than

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you should be sufficient incentive to arouse you to action.

In planning any business move, it is highly necessary that it should work out successfully, for every campaign is a speculation which requires an expenditure of time and money which may or may not bring profitable returns. The more consistently a business move is worked out, the safer is the speculation, and it is much better to work out one plan to a successful issue than to start half a dozen schemes, any one of which might prove profitable, but which, when lumped together and served half-baked, are a total failure. We have been impressed with this idea from the experience of one of our friends, who started a number of good ideas, and, in his enthusiasm for the merits of the lot, started them all at once, and never finished one, for none of them proved profitable.

We believe that if this photographer had not bitten off such a big mouthful, but had put into execution one or two of his ideas, that they would have worked out most successfully, for he would have given that one or two the attention they needed to make them go. The man who has ideas and works them out successfully is the man of the hour. The man who has ideas and never works them out is the one with the hard-luck story always on his lips. Right now is the time to put one over, but let it be one at a time.—*Trade News.*

System for the Photographic Studio

Too much system is like too much mustard, it defeats its very purpose. Nor can any system be said to be perfect. Every business has its own peculiarities, and every merchant or business man engaged in that business encounters conditions peculiar to his particular establishment, which makes the hide-bound application of even the best-planned system impossible. With the photographer a complex series of records is not necessary. His is, for the most part, a cash business and, as a rule, a comparatively small business, employing a very few people or perhaps none at all. There are studios here and there, of course, which are exceptions to this rule, but they are few. The photographer usually has no elaborate pay-roll to maintain, with its time sheets and piece-work records, no heavy ledgers, fifteen-pound filers, or ponderous stock sheets. His main interest, so far as records are concerned, is in keeping track of his receipts and expenditures and making sure there is always a balance large enough to yield a satisfactory profit.

Then the photographer needs to know more about his business than he usually does. It is not enough that there is a favorable balance shown between the debit and expense column. Expenses will creep in, which require an expenditure of cold dollars, which are not at all apparent on such a record. Depreciation is one of them; waste is another—a tremendous item in photography.

The value of any system for getting at the details of a business is in direct proportion to its simplicity.

Now the Eastman Co., with its usual up-to-datedness, has carefully prepared a little book giving a simple bookkeeping system for a photographic studio which will prove invaluable to every photographer. This work is not for sale, but is distributed at the sessions of the Eastman Schools, and should be in the studios of every well-equipped establishment.

How to Keep Business when You Have Obtained It

As a photographer I found prices going down owing to the ease with which photographs could be produced, and as I had, along with photographers of earlier decades, "made a bit," I determined to retire and live in the country. That was number one. Number two: I soon found I was no match for the countryman, or rather for the country laborer; they stole horses and everything else, except the rats. The result was I turned to process and spent several sessions at the Polytechnic and at Northampton Institute where I met the present principal of Bolt Court, who was then instructing a class in three-color work, and also at Messrs. Penrose's evening instruction class under Dr. Klien with collodion emulsion.

To do so I had to bicycle from Farnham and back each night, a distance of forty miles each way, arriving home about 2 A.M. Not being in business, the time I arose in the morning did not matter.

What has this to do with *punctual promises?* a reader may say. Well I will put it, *promises punctually performed* made me, and in my business as a photographer it was the rarest occurrence for a customer to be disappointed, and many a time I have sat up very late in order to prevent such a disaster. I purposely call it a disaster, for in my own case I never deal again with a tradesman who has disappointed me, and I consider that what I made was the result of strict attention to business, and in that phase I include *punctuality.*

Some fifteen or sixteen years ago I obtained a position (as I was sick of doing nothing, and of the country) in one of the best firms in London, and am still with them, although elderly, and now working four to five hours' overtime most days. I have not the presumption to suppose that my work is better than other men's, but this is the legend of the office: "That if Mr. Clarke promises the work you may be sure you will have it to time," and in most cases it is delivered to the heads of the department at least twenty to thirty minutes before the time promised.

Only once in the long years from 1899 to the present time have I failed, and then I was ten minutes late; the result is that absolute dependence can be placed upon my promise and the firm can with confidence expect the work delivered to time. Consequently I draw a nice stipend, much beyond my modest requirements, and am able to live in a house with a half-acre garden in a part of Old Clapham, within three miles of the business premises.

To be successful in business, your promise must, like your word, be your bond. Punctually perform your *promise.*—A. Clarke in *Process Monthly.*

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Artificial Lighting for Motion-picture Studios

The motion-picture industry has grown to enormous proportions since the first studio used artificial lighting, twelve years ago. Where there were five firms making pictures then, there are more than a hundred now; where there were a hundred actors, there are now five thousand; where there were a hundred thousand dollars invested in equipment, there are now millions.

Wonderful progress has been made in every department of the business. From the crude and for the most part buffoonery sort of acts done by a dozen people, have grown the elaborate plays and brilliant spectacles participated by many artists with their huge companies. Scenes made in *all parts* of the world are combined to make the completed story.

The development from the "movies" of twelve years ago to the dramatic, historical, educational and feature pictures of today has been brought about by the growth of the public demand. At the very foundation of this demand is the insistence that the pictures on the screen be portrayed truly. This can only be done by the highest excellence in photography and its first essential is proper lighting.

It requires light in a considerable quantity, of short wave-length and high actinic quality, to reduce the silver on the film so it may be developed into a satisfactory photograph with the light and shade and modelling.

Quantity and quality must go hand in hand. The motion camera makes sixteen exposures to the second. At this speed there most be sufficient light to act on the sensitized film. The quality of the light most be equal to the *best* north light in diffusion, and both quantity and quality must be uniform and constant as long as required for the picture.

The Cooper Hewitt fulfils the specifications for the ideal light; it is extremely actinic, *i*, *e*., rich in the green-blue and violet rays; it comes from an *area*, not a *point;* it is free from glare; it is perfectly diffused and steady at all times; it has daylight quality; it is ideal for portraiture; it is available at an instant notice; it is highly efficient, has long life, and requires no trimming or attention.

Over fifty studios both in Europe and America have demonstrated that the Cooper Hewitt lights, conforming as they do to the above specifications, produce in motion-picture studios results superior to daylight—in that daylight is a most variable quantity and only available a few hours per day.

Preparing the Negative for Enlarging

It is sometimes said that this is the most important operation in enlarging, and that success depends upon it. These sweeping statements may fly beyond the mark, yet they go a long way toward stating the case. Time spent on making the negative as suitable as possible for enlarging is not only wisely spent but often more than pays its way by saving subsequent work on the print. Moreover, certain things can be far better done on the negative than on the print. For instance, it is easy, if not to match exactly, yet at any rate to stop out a clear-glass dust or bubble spot on the negative, which, if left untouched, gives a black spot on the print which requires considerable skill and much patience to remove from the print. Furthermore, if the dust spot is overdone in size or density so as to give a white spot on the paper, still it is far easier to bring down a light spot to match the neighboring part of the picture than it is to knife out a black spot amid light surroundings.

1. Clean the glass side with a little methylated spirit and then with a few drops of dilute ammonia.

2. Clean the film side with methylated spirit, or, better still, pure alcohol. Look carefully for any finger marks.

3. Spot out clear spots, dust, air bells, scratches with retouching pencil, water-color brush, gum water, and lamp-black for the lighter parts, and with photopake or some other similar preparation for the dense parts. For touching small clear spots with dark surroundings a very useful tool is made by inserting a sewing needle half its length into a wooden penholder, and then breaking off about half the projecting part of the needle. If the square broken off end is just touched with the pigment, and then brought vertically down on to the clear spot, we can thus get a tiny opaque spot of pigment of the (usually) required size.

4. Overdark spots in the negative may best be removed by scraping with a sharp knife, with blade at right angles to the surface of the plate. Very small black spots can with due skill and patience be removed with the point of a needle, but one has to go cautiously to work by this method.

5. The film is now retouched by pencil and brush, as the circumstances of the case may require. Remember, every touch will be enlarged along with the rest of the negative, and therefore "the less the better" is the maxim here. If the reader cannot get on without retouching varnish, then the black spots should first be knifed, then the negative rubbed with retouching varnish, and then the dust, etc., spots removed.

6. After any pencil or brush work comes the broader work, such as helping up clouds, etc. This may be done by charging a tightly rolled plug of cotton-wool with powdered crayon, which has been evenly spread on a piece of rough opal glass or leather. Chalk also may be applied with a camelhair brush or with a leather stump, but the last named, unless skilfully used, is liable to leave scratches.

For work on the back (glass side) of the negative we have two good strings to our bow: matt varnish, which may be strengthened in effect by dissolving in it a few flakes of iodine. Varnish for enlarging should be of the extra fine grain kind. This can be got by reducing the proportion of benzol and increasing the ether (*e. g.*, sandarac 100, mastic 25, ether 1200, benzol 300 parts). Our other string is "Bildup," a clear varnish on which one can work easily with pencil or stump.

8. If any rubbing down (*i. e.*, reducing of the film) is to be done, it is a good tip to cut out of sheet celluloid (*e. g.*, an old film negative),

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a stencil or template, so as to protect the parts to be left unaffected. This will, of course, be done before varnishing. For rubbing down perhaps the best thing is simply a bit of old linen rag or chamois letter just moistened (not *wet*) with methylated spirit.

FINISHING ENLARGEMENTS

It is astonishing to see how greatly an enlargement can sometimes be improved by a very little judicious finishing. It is by no means an uncommon thing to see quite good technical work up to the enlargement itself, which just fails by reason of perhaps some white or light marks which require a little pencil, crayon, or brush attention. Or there may be a little granularity in, say, a portrait, cloud, or other part calling for delicate rendering, and so forth. Here are a few quite general hints in connection with this matter.

1. Aim at producing the required effect with the least possible addition to the print. Over-finishing is fatal to good effect.
2. Wait until the print is toned, if it is to be toned.
3. Work by daylight, if possible.
4. Keep the head well away from the work.
5. Use a hand rest to prevent the hand rubbing or smudging the parts worked.
6. Never use ordinary blacklead cedar pencils, as they give a more or less shiny surface.
7. For preparing the work, *i. e.*, to give a "tooth" to the gelatine surface, use pumice powder sifted through a double thickness of finest muslin on to the print, and then gently rubbed with the finger tip or ball of the thumb in a circular or spiral direction. The pumice powder is then removed by a soft brush.
8. For removing small over-dark patches with ink-eraser cut a template or mask the exact size or shape of the dark patch out of an old celluloid film.
9. Mix a little sifted pumice (7) with finely powdered black crayon and apply with a tuft of cotton wool for working large surfaces, such as clouds, sky, water reflection, white drapery background of vignette, etc.
10. Materials available: black chalk, crayon, Negro pencils, Conte crayon, water colors (black, etc.), ink-eraser, pumice powder, cotton wool, leather stump. It is quite a mistake to suppose that any black material will match any black and white print. There are blacks and blacks. A very exact match should be aimed at.—*Amateur Photographer.*

"QUALITY" AND "CONTRAST" IN BROMIDE ENLARGEMENTS

DIFFICULTY in securing even gradations and a perfect range of tone when making bromide enlargements is a problem that frequently occurs. It is not uncommon to find that a negative which gives a quite satisfactory P.O.P. print by direct daylight will persist in giving a harshly contrasted print when enlarged by artificial light. Here are two factors: viz., day *vs.* artificial light, and contact *vs.* enlarging. To take the last-named first. It may be quite likely to happen that we have a contact (small-scale) print in which there are no large patches of strong light and shade contrasts, but certain quite *smal* strong contrasts, as, for instance, a sunlit ivy-covered wall. If now we enlarge these small black and white patches their augmented size forces them on our notice. They may be just as black and as white in both the pictures, but escape notice in the one case and compel attention in the other. Thus a bit of paper in the foreground of a street picture may be entirely unnoticed in the small negative until its presence is revealed by an ugly patch of meaningless white in the enlargement. The actual size of a picture is an important factor in its success or failure. This by no means implies that the larger version is the better; the contrary is quite often the case. This is partly explained by what we have just mentioned, viz., the contrast effect as affected by size. (This has an important bearing on the making of enlarged negatives.)

The question of the illuminant has also to be considered, viz., day *vs.* artificial light (gas, electricity, etc.). Hence for enlarging by selected (zenith) daylight we can use denser negatives than when using incandescent gas, for example. There is also another unsuspected cause of trouble to beginners, viz., the color of the negative. Now most workers know that in general a pyro-negative is more or less inclined to yellowness, as compared with, say, an amidol, metol, or quinol negative. This is apart from pyro *stain*. Hence if we enlarge by incandescent gas two equally dense negatives, one pyro, the other amidol, we should get a more contrasty print with the pyro negative. Further, pyro quite often imparts a slight yellowish stain to the gelatine of the negative—visible on the rebate. This may be so slight that we can only just see it, even when the negative is laid film down on a sheet of white paper. Yet with artificial light this pale yellow screen, for that is what it amounts to, can have an appreciable effect in prolonging exposure and accentuating contrast. At times one may deliberately impart a slight yellow stain by bathing a weak, soft-contrast negative in a little pyro and plain water. Harsh contrasts are often due to the negative being too contrasty, *i. e.*, over-developed. If this has been preceded by under-exposure the lack of shadow detail will make the harsh contrasts (of over-development) all the more noticeable and objectionable. Harsh contrasts may also be due to over-developing a print (enlarged) which has had its exposure cut a little too fine. If the developer is decidedly cold that would also seem to tend to contrasty results.

Prolonged immersion in the developer—especially dangerous when the quantity of sulphite or other preservative is insufficient or the water contains a good deal of dissolved air—is usually the cause of stains in prints. Developers are advisedly prepared with water that has been briskly boiled for a few minutes, and then allowed to stand until cold (say 65° F.). In general, bromide is not essential for bromide paper development. But if its presence is found to be imperative it should be reduced to the smallest serviceable proportions, as any

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excess is quite liable to yield a greenish print which, apart from sea pictures, is seldom acceptable.

Flatness is, roughly speaking, the opposite to harsh contrasts, and also is attributable in general to the opposite conditions tending to contrastiness, viz., over-exposure, under-development, thin negatives, and so forth. But one all too often sees examples of dead, dull, flat prints which have a good deal of fog character as well. In many of these cases it is very difficult to diagnose the cause of the trouble without having a full knowledge of the conditions of their production. The following should all be considered as possible: (1) Flatness of the negative due to over-exposure followed by little or much exposure. (2) Overstrong lighting in the case of a soft-contrast negative, which with subdued light may give excellent results. (3) Over-exposure of the enlargement. (4) An over-energetic developer, due to an excess of alkali, lack of bromide, too high temperature.

With regard to the flatness due to general fog there are among others the following points to consider: (5) Excess of light, with a soft or thin negative. (6) Internal reflections between the condenser and projecting lens. (7) Reflected light from the easel, light escaping from the lantern, unsafe dark-room light, stale or fogged paper due to damp, chemical fumes, etc. An unsuitable, over-energetic developer (see 4).

The more rapid brands of bromide paper seem more prone to yield slight general fog than do those of normal sensitiveness. It is also more noticeable in the case of smooth than rough surface papers.

Vignetting which shows too sudden transition from dark to light may be due in part to an unsuitable negative in which the background is decidedly dark, or a light ground into which dark objects project. But the chief factor at fault is the wrong use of the vignetter. It may be too near the paper, or more often insufficient movement of the vignetter has been applied during the printing. A little experimental practice in employing the vignetter at different positions, in the degree and direction of its movement, and taking into consideration its size, will very quickly give the worker the needed hints as to how he can quite easily obtain his desired results. —*Amateur Photographer.*

Transferotype Paper

Many years ago I remember doing a small amount of work with a stripping P. O. P. then on the market, but very little use appeared to be made of such a paper, and I believe its manufacture was soon discontinued. Recently I have been experimenting with the "Transferotype Paper" manufactured by Kodak, Ltd., and have come to the conclusion that it is a valuable addition to the photographic papers available.

Transferotype Paper is of the same speed, and sold at the same price, as Nikko bromide, or other high-class rapid paper of the kind. This means that it must be worked in the dark-room with orange or ruby light, and that it is suitable for enlarging as well as for contact printing. In fact, it can be used as an ordinary glossy bromide paper.

But it is more than this. In its preparation the paper is first coated with a soft soluble gelatine, and then the emulsion is coated with this. As a result, a print can be squeegeed down to any suitable support, placed in hot water, and the paper backing stripped off so as to have only the film on the support. It is thus a transfer process like carbon, and, of course, the picture is reversed from right to left.

With each packet of paper are given full instructions for use, explaining how to transfer prints to paper, canvas, glass, opal, ivory, wood, metal, and, in fact, anything upon which a print can be laid and which will stand immersion in hot water.

It may be noted that there is one omission in these instructions. Any paper suitable for single transfer by the carbon process is also suitable for Transferotype without further preparation, but it is not mentioned that such a paper should be soaked before the print is laid down upon it. This is particularly necessary in the case of rough surfaced papers, which it would be best to place in warm water and leave till the water is cold. Unless something of this sort is done to swell the gelatine coating thoroughly, the transferred print will show a multitude of bright spots and patches due to imprisoned air which has prevented perfect amalgamation between the gelatine of the support and the emulsion of the Transferotype paper.

A word as to the lateral reversal of the image. As in single transfer carbon, this is quite immaterial in the case of most landscapes and many other subjects. Where such reversal is not permissible it can be avoided. In the case of film negatives it is only necessary to reverse them, and print from the back, as this causes no appreciable loss of definition. In the case of glass negatives, the print, whether of the same size or enlarged, can be made in an enlarger with the negative reversed in the carrier. It will be shown that when using the paper to make lantern slides the reversal can be counteracted in another way.

It was to the making of lantern slides that my first experiments outside the suggested uses of Transferotype were directed.

Those who have tried it will admit that it is not an easy matter to make on lantern plates a series of slides suitable for home use when the illuminant for the lantern is oil, incandescent gas, or any other light that is weak compared with oxy-hydrogen or the electric arc. The trouble is to get a slide that is at the same time both thin and clear, and that will give all the tone gradations of the subject completely. Now I have found that it is possible by means of Transferotype to produce perfect slides for this purpose, and to do so with ease and certainty. Anyone who can make a good bromide print can make a good lantern slide.

It is necessary to pause here, and make clear a fundamental point underlying my experiments. This point is the full and complete development of the prints. The one important thing is to ascertain precisely the correct exposure which will give all the gradations of the negative when

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the development of the print is carried as far as it will go. If when developing action has ceased the print is too light, exposure must be increased; if the print is too dark, exposure must be decreased. There must be no attempt on the one hand to "force" development; nor, on the other, to withdraw the print from the developer before it becomes too dark. Full development must give just the right print. To simplify matters I will hereafter refer to the *X* exposure, as meaning the exact exposure that gives the most perfect print when development has been carried as far as it will go.

My developer for such bromide work is a simple one, and I have found nothing to better it. I dissolve one ounce of sodium sulphite in a pint of water, and then add fifty grains of diamidophenol. This must be used fresh, and a pint will develop a dozen twelve-by-ten prints, or their equivalent, without any serious slowing down towards the end, and without any deterioration in the color and purity of the image. Amidol, or any of its substitutes, answers equally well.

Now as to making slides. The first and most important step is to find the *X* exposure for Transferotype. I repeat that this means the exact exposure that gives a perfect print, examined in the ordinary way, when the paper has been developed as far as it will go, and then fixed in the usual hypo bath. For a lantern slide for home use with a weak light double the *X* exposure is given; for public exhibition with, say, the oxy-hydrogen lime light, three and a half times the *X* exposure is necessary. In the latter case the fully developed print is hopeless as a print; nothing will show as clear paper unless it be an extreme high light. Between the two exposures mentioned it is obvious that there are others that would be found more suitable according to the strength of the light to be used in the lantern.

The print, when developed and fixed, is washed thoroughly, and is then squeegeed down on to clean glass three and a quarter inches square. Cleaned waste lantern plates, quarter-plates cut down, or the ordinary lantern cover glasses (costing in normal times about fifty cents a gross), are all equally suitable. A piece of blotting paper is laid over the print, and a flat rubber squeegee is the most suitable tool for rubbing the print into perfect contact. It is important that no edge of the print should project beyond the glass, or the least touch on it will lift the print out of contact. Such edges can easily be trimmed off with scissors.

When the print is squeegeed on to the glass a piece of blotting paper is laid over it, and it is kept under pressure for at least an hour. A good way of doing this is to make a pile of the plates, with blotting paper between, and a box of plates or glasses on top.

When the slides have been under pressure for an hour or so, the first one is placed in water about as hot as the hand can comfortably bear. In a few moments a corner of the paper is lifted with a pin or the point of a pen-knife, and stripped off. It should come away with perfect ease, leaving the film on the glass. This should now be rubbed gently under water with a plug of cotton-wool to remove the adhering gelatine. The slide is put aside for a few minutes to cool, and then placed for five minutes in a 10 per cent. solution of formalin. Nothing remains but to dry it.

Slides produced in this way are by no means makeshifts, as they bear the most careful comparison with those made in the ordinary way on lantern plates, and the cost is very much less. As a rule, pieces of Transferotype 3½ x 2½ will be large enough, and these can be bought in packets of twenty pieces for about twelve cents.

The blacks and grays of such slides are very pleasing, but brown tones can readily be obtained by the usual methods of toning bromides. If the print is toned immediately after washing, the tone will be at its coldest; if it is toned after stripping it is rather warmer; and it is warmer still if the toning is postponed till the film on the glass is dry.

As has been said, the image is reversed, and if the slide is covered and spotted in the usual way it will appear reversed on the screen. But this can be obviated by placing the spots on the back of the lantern plate itself, instead of on the cover glass. This brings the picture right way round on the screen.

In a further note (which will be published next month) I will describe another series of experiments that gave equally satisfactory results.—W. L. T. WASTELL in *Photography*.

REMOVING GELATINE FILMS FROM CRACKED NEGATIVES AND THEIR TRANSFER TO A NEW SUPPORT

IT sometimes happens that a negative of value becomes cracked in such a manner that the glass only is broken, not the film. There are several ways by which the difficulty of printing from such a negative may be overcome so as not to show the crack. One method in particular is the insertion of a piece of albumenized paper or good tissue paper between the face of the negative and a piece of clean glass plate the size of the negative, then binding the two together with strips of gummed paper. The best results are obtained by this plan when albumenized paper is used.

Sometimes more than one crack is produced in a negative, in which case the difficulty of utilizing such a defective plate is greatly increased.

Many times the question of how to best remove the film and retransfer it to another glass plate has arisen. One difficulty—if not the most important—has presented itself, namely, how to penetrate the substratum which holds the gelatine film composing the negative, so as to release it from the glass support, because the substratum is generally a compound of gelatine and chrome alum, which is harder and more adherent to the glass than the gelatine film. This is often noticed when cleaning old negatives with hot water and carbonate of soda. Although the film dissolves from the plate perfectly, the substratum still remains in patches in such an adherent form as to require the use of a knife to effect its complete removal.

There is a method of accomplishing this without the use of either hot water, soda,

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potash, or of strong mineral acids, none of which is certain in its action.

The process here to be described is one of great simplicity—one that can be used with certainty by any person, the solution employed being quite cold, and the application of heat being quite unnecessary. In fact, the colder the solution the better the result.

If the negative is a portrait and the face has been retouched, it will be advisable to remove the retouching with a tuft of cotton moistened with turpentine and cleaned off thoroughly. This, however, is not absolutely necessary, for a film can be removed just as well with the retouching on as if it had been removed. Whichever plan is adopted, a small amount of retouching will be required after retransfer. One point in particular must be attended to, the trays used must be thoroughly clean, and only hard rubber or composition trays can be employed, for reasons which will be explained. The bottles that are to contain the stripping solutions must also be quite clean. In fact, use new ones so as to be quite sure of this. The results will repay those undertake this extra trouble.

The composition of the chemicals given below is the same as that known as "Magus." It is not only simple, but sure and certain in its action. Prepare the two following solutions in two separate bottles:

No. 1

Fluoride of Sodium . . .	½ oz.
Water (ordinary)	16 oz.

Cork this bottle, shake well, and mark "No. 1."

No. 2

Citric Acid in powder . .	1 oz.
Water	16 oz.

Have at hand a clean glass plate, say 6½ x 8½, in a tray of clean, cold water. If the negative to be stripped is 5 x 7 it should be transferred to a 6½ x 8½ plate, so that if the film is not placed quite truly, it will be a very easy matter to cut the plate to the right size after the film has dried. To strip the film from the cracked negative, take four fluidounces of No. 1 and pour into a tray of hard rubber, 6½ x 8½; then add four ounces of No. 2. Rock the tray so as to obtain complete admixture of the two solutions. Then immerse the negative, film side uppermost; carefully soak the tray; first endwise, then crosswise. Allow it to stand for half a minute, then rock again. It will now be seen that the film is frilling slightly at the edges. Rock the pan a little. Now, with the forefingers and thumbs of each hand, lift the film clean off the cracked plate, place it in the water above the clean glass plate, lift the plate by the two top corners, and adjust the film so as to leave a clean margin all round. Lift the plate and film together by the top, and drain slightly. Lay the plate in a horizontal position and carefully adjust the film so that there are no air-bubbles present. See that the film perfectly adheres to the glass support. Then, after draining off the excess of water, allow the transferred film to remain in a horizontal position until dry. Never allow the drying to take place with the plate in a vertical position, for the film may become split. There is just enough tackiness upon this side of the film to admit of its adhering firmly to the glass plate. By this method of transfer a valuable negative may be saved for future usefulness.

A very useful adjunct for this class of work is a very thin *soft* squeegee. With the aid of this handy tool the transferred film may be set down very evenly upon its new support and the excess of water removed at the same time.

It may be advisable to make a trial or two upon some discarded negative before attempting the transfer desired. This will give the practice and confidence necessary for the final operation.

The process will appear marvelous to those who have never performed such an operation. The true action is this: When any acid is brought into contact with fluoride of sodium (citric acid in particular), the element fluoride separates from the sodium base and attacks the glass surface through the porosity of the film. By this means the adherence of the gelatine film together with its substratum, is released, the film being then easily lifted. At the same time the citric acid combines with the sodium to form citric of sodium, which remains in the water. Several negatives may be stripped in the same solution, but the solution will not keep. After use it should be thrown away.

If it is desired to enlarge the film after stripping, simply allow it to remain in the clean water for a minute or a short time longer, then proceed as before to attach to the glass plate. Caricatures are easily produced by this means—by stretching the film unevenly. The face or any part of the figure in a portrait can be easily distorted, and it remains permanently so upon its support.

The reason for using hard rubber or composition trays instead of glass or porcelain is to avoid their being attacked by the liberated fluorine, which would also lessen the action upon the negative.

System in the Exposure of Enlargements

A good deal is written on the various means of finding the correct exposure when enlarging by daylight or artificial illuminants, yet I can never learn that those engaged in practical enlarging work make any use of them. I am afraid that alongside them the system (if I may call it so) which I have been accustomed to use looks a very poor thing—nothing, in fact, but rule of thumb. Nevertheless, it has stood me in good stead as an assistant, who, by force of circumstances, has changed his job pretty often and, therefore I may, perhaps, shortly say what it is for the benefit of those who may be disposed to use it in their own commercial work. As in outdoor work, there are certain variable factors in enlarging. But, on the other hand, it is much easier to standardize the conditions than it is in outdoor work with the camera. Let me first run over the various factors:

Negative.—This is one of the chief things which vary. I have made up for my own use a set of three negatives—one of which I call average

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one thin, and another dense. These I have bound up to one piece of ground glass with lantern-binding, and they serve as a useful means of judging what exposure a fresh negative requires in enlarging. I reckon my average negative as 1, the thin as ½, and the dense as 2. Even if a negative does not come within this range—that is, is either thinner or denser—comparison of it with one or other of my trio enables me to form a much better judgment of the exposure required than simply by holding the strange negative up to the light and judging it by itself.

Light.—Many professionals use daylight in preference to an artificial illuminant, which brings a second very variable factor to be allowed for. Here a great help is an ordinary exposure meter. I have taken a time of 8 seconds on the meter as a standard, so that for a 2-seconds darkening I use a factor of ¼; for 4 seconds, ½; for 16 seconds, 2; for 32 seconds, 4; and 64 seconds, 8.

Degree of Enlargement.—Fortunately here one can follow a regular rule. I have taken as a standard an enlargement of 2 linear. Then for three times the exposure requires to be just about twice; for four times enlargement, three times; for five times enlargement, four times; for six times enlargement, five times; for eight times enlargement, nine times; and for ten times enlargement, thirteen times.

Lens Stop.—Here the rule, when enlarging by daylight, is exactly the same as in ordinary photography—*e.g.*, *f*/11 requires twice the exposure of *f*/8, *f*/8 twice that at *f*/6, and *f*/6 twice that at *f*/4.

Paper.—A useful guide to the relative speeds of bromide papers are the numbers given on the Watkins card of plate-speeds, or, if one is starting work with a new employer, it is a simple matter to make a few contact exposures with the new paper in comparison with one which one has been accustomed to use previously, and so to get a factor converting from one paper into the other.

To give an example now of this system in practice, my notes of exposures told me that with a negative which corresponds with the thin negative of my set, with an enlargement of two times with an actinometer time of eight seconds, and with a lens stop of *f*/8, the exposure on a given bromide paper (call it A) is two seconds.

This is something to go upon in sizing up the exposure required under other conditions For example, suppose one is enlarging from a negative which corresponds with my "medium" which is being enlarged six times with a lens working at *f*/6 and with a light which takes 32 seconds on the actinometer, then the exposure will be 2 by 2 (negative), by 5 (degree of enlargement), by ½ (lens stop), by 4 (actinometer), equals 40 seconds—that is, if a bromide paper of the same speed is used. By splitting up the operations in this way, and using these simple factors which call for only the simplest multiplication or division, it is only the work of a few seconds to figure out the exposure, and thus to save the waste of material and the time spent in making test exposures, to say nothing of the loss which oftentimes results by wrong exposure of the full-size bromide sheets.—*British Journal of Photography.*

Look Inside Your Camera

A photographer will sometimes spend a lot of time trying to find the cause of a series of fogged negatives. He will look for holes in the bellows of his camera, he will overhaul his dark slides and he will test his dark-room lamp. When he fails to discover anything wrong with these, he gives up and decides that his plates or films are faulty. Before blaming his plates or films, however, he should look for reflecting surfaces inside his camera and lens mount.

When the dead-black has peeled off, or has been worn so much that its surface acts as a reflector, there is sure to be fogging trouble every time brilliantly lighted objects are photographed. As a rule, professionals use a lens that will cover a much larger plate than the one on which most of their work is done. This means that, when they make an exposure, a great deal more light enters the camera than is required for the size of plate. This excess of light, unless it is absorbed by a dead-black surface, will be reflected onto the plate by the bright parts inside the camera. When a smaller lens is used the trouble is reduced, but it is not removed so long as the reflecting surfaces remain. Even with a lens that just covers the plate, some of the light which falls on the smooth surface of the emulsion will be reflected back into the camera and, if it strikes a bright part, may be reflected again onto a different part of the plate.

When a large lens is used it is a good plan to fix a black mask behind it of such a size and shape that it will obstruct all the rays of light except those which actually fall on the plate. But whether a mask is used or not, and no matter what the size of the lens may be, nothing will get rid of the trouble so long as reflecting surfaces remain. Therefore the photographer should always have at hand some dead-black varnish which he can apply to any part of the inside of his camera that is likely to act as a reflector.

For general use there is no better varnish than the one made by adding lampblack to celluloid solution. The way to make it is to clean some old film negatives, cut them up into small pieces, and put them into a bottle containing amyl acetate. They will dissolve quickly, and enough should be put in to make a thick syrup of about the consistency of treacle. This syrup will form the base of many varnishes, and, as it improves with keeping, a good quantity should be made and kept handy.

To make a dead-black varnish, take a little of the syrup and dilute it with acetone until it is of a convenient consistency to put on with a camelhair brush. Then add lampblack until the mixture gives a perfect black when applied with a brush to a piece of smooth wood or metal. It must, of course, be stirred well to produce a perfect mixture. The varnish should be applied with a soft brush, and it is generally best to give a second coat after the first one is dry.

The best lampblack should be used—not the kind sold at the oil shop, but the better quality sold by artists' colormen. It is very cheap, and a quarter of a pound will last for several years.—*Professional Photographer.*

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Photographs in Relief

In 1899 Andresen pointed out the property possessed by hydrogen peroxide of dissolving both the reduced silver and the gelatin substratum of a photographic plate. This effect, however, sometimes took place very slowly, even with very concentrated hydrogen peroxide, fifteen to twenty-four hours being required. The author has demonstrated that the action may be made to take place in a few minutes if several drops of acetic acid are added to the peroxide bath, or if the bath is composed of water, 100 c.c.; hydrochloric acid, 10 c.c.; barium dioxide, 4 gm. The dissolution of the image takes place in a selective manner, the dense parts of the image being more readily attacked than those containing a proportion of the unreduced salts. This action results in the formation of an image in relief inversely proportional to the opacity of the metallic deposit. Another bath for producing this effect has been patented by Belin and Droillard, consisting of hydrogen peroxide to which are added nitric acid, sulphate of copper, and bromide of potassium.

If the negative has not been previously fixed in hyposulphite, a positive image is obtained, the differences of shade being represented by varying thicknesses of unattacked gelatino-bromide of silver. By simple absorption of aniline colors the positive image may be made to assume any tint. The thick parts of the gelatin relief absorb a relatively considerable quantity of the coloring matter, and the thin parts proportionally less. Prints on paper can be obtained by simple contact from such a colored relief plate while damp. To this end, a paper coated with a thin layer of hard gelatin is employed; for example, that known as *simple transfer* in the carbon process. Two or three prints may be so obtained from one soaking in the color-bath, after which the plate must be returned to the bath for an additional supply of color. Photo-printing plates may also be made from the relief by the stereotype process—*Journal Franklin Institute.*

Let the Buyer Beware

With the efforts that have been made in recent years to make advertising and selling honest and honorable—it would seem that such a warning to the buyer would not be necessary—but it is.

While the manufacturers of plates and papers are keeping chemical prices as low as possible and are publishing revised formulas that may be made from chemicals that can be obtained in the open market, "substitute" developers are cropping up from different sources with fabulous prices to suggest their worth, but nothing definite to indicate their composition or actual value.

The Research Laboratory of the Eastman Kodak Company has been doing some valuable analytical work for the photographer with the result that one "developer" which sells for over $30.00 per pound was found to contain: metol 10 per cent., hydrochinon 16 per cent., sodium sulphite 30 per cent., *cane sugar*, 33 per cent., and other constituents, (mostly water) of no value as developer, 11 per cent.

Three developers that have been examined contain sugar in quantities varying from 30 per cent. to 50 per cent. One contains 36 per cent. of table salt and some pyro, while another contains 40 per cent. of ordinary starch.

The manufacturer has the means of knowing, and is exerting every effort to *give* the photographer reliable formulas which do not even contain a "joker" intended to benefit his chemical profits.

Use the formula recommended by the manufacturer of the paper or plates. He is as much interested in your results as you can be. Then, if you would like to experiment by adding a bit of sugar or starch or salt to your developer, it would be more economical to get it from your wife's cupboard and try it out with your eyes open.—*Photo-Digest.*

Combination Printing

Every photographer has to resort to combination printing occasionally in order to produce a satisfactory picture of some particular subject. It may be only the simple process of printing a sky into a bald-headed landscape, or it may be the more complicated task of taking a figure out of one group and printing it into another.

There are several methods of double printing, all of which are good if ordinary care and a little skill are given to the work. The method selected for any picture must necessarily be the one that will give the best result with the least trouble. This has to be decided largely by the number of prints that will be wanted. For instance, if a few copies only are required, the combined printing may be done on the paper for each print; but if a large number are wanted, it is more satisfactory and more economical to make a combined negative.

Take, for example, a subject that comes to every photographer. Two or three negatives are taken of a group; the one showing the largest number of figures to the best advantage is spoiled by one sitter either having moved or assumed an unsatisfactory expression. In one of the other negatives that figure is quite good so that the obvious course is to take the figure out of the one picture and print it into the other.

One way of doing this is to block out with opaque the faulty figure in the generally good negative, and all portions except the same figure in the other negative. When a print is made from the second negative, it will, of course, show only the one figure on a perfectly white ground. This print must then be accurately placed in position on the first negative and printed in the ordinary way. It goes without saying that the two printings must be carried to exactly the same depth, otherwise the introduced figure will not harmonize with the others.

An older method, but one that is still useful, is not to block out with opaque, but to make a print on thin paper from the negative with the one good figure, and then carefully cut out the figure and fix it to the other negative covering up the faulty figure. The other portion of the

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print can be used as a mask and the combined print made in the same way as with blocked-out negatives.

Of course, a figure that was not included when the group was taken can be put in by the same method. In this case a negative must be made of the person to be introduced, taking care that the size of the figures and the lighting match as near as possible the figures in the principal negative. When the best place has been decided for fitting in the new figure, proceed as before either by blocking out or masking. In most cases a little spotting will be needed on the finished print, but this need not amount to much if care has been used in getting the register.

Where a large number of prints are wanted a combined negative must be made.

The old method of doing this was to make P.O.P. or Glossy Bromide prints from both negatives, mount the one from the first negative then cut out the figure from the second, rub down the edges at the back with pumice, and paste it over the faulty figure in the mounted print. Then after a little touching up a copy negative was made.

The method which is generally employed now is a little more complicated, and one that requires very careful handling. It consists of cutting out the faulty figure in the film of the first negative, and replacing it by the film of the good figure from the second. It will only be necessary to replace the head in cases where the other portions of the figures are satisfactory.

Lay the first negative on the retouching desk, and with a sharp knife cut a line round the head and neck, or as much of the figure as it is necessary to replace. Scrape away all the film within the line until the glass is quite clear then take a small clean brush and go over the patch with a little pure thin gum, and lay the negative aside for a few minutes to dry. Put the negative on the desk again and lay the second negative over it so that the clear patch is exactly under the part that is to be transferred. Next cut a clean line with the sharp knife through the film of the second negative so that the piece inside the line will fit the clear patch, and then scrape away the film outside the line to isolate the piece to be removed.

The next step is to strip the piece of film from the second negative and fit it on to the clear patch of the first. To do this lay the second negative on a flat surface, face up, and damp the portion of film to be removed with a solution made of four drops of hydrofluoric acid in about half an ounce of a mixture composed of three parts methylated spirit and one part water. Keep the film well soaked with the solution and in a few minutes it will become quite loose. Before removing it from the glass it should be well soaked in spirit and water to remove some of the acid. Next get a piece of thin transparent paper and press it gently over the film. When the paper is raised the piece of film should adhere to it and leave the glass. The paper with the film attached is now laid down on the first negative and the piece of film fitted into the clear space provided for it. Moisten the paper with spirit and water and carefully raise it so that the piece of film is left sticking in its place on the negative. In about ten minutes the joints of the combined negative may be touched up with retouching knife or spotting brush.

Should the negatives be of different printing densities, the difference may be adjusted with matt varnish.

If the original negatives are too valuable to be risked by this process, transparencies may be used for making the combination, and a new negative made from the finished transparency.—*Professional Photographer.*

Hot Weather Advice

Everything about the studio from darkroom to conversation must be readjusted during the hot weather.

Watch the chemicals. Keep them as cool and dry as possible. Keep all bottles well corked and all cans tightly closed. Get all of the dried chemicals cleaned out and make the dark room as sweet and clean as possible.

Rearrange the operating room. Put it into its summer garb, so that it may appear cool and restful to the customers. Try a bit of fresh, sweet matting for the children to play on, and some fresh toys for them to play with, for they are unusually fretful these hot days and need a a little extra effort to make them tractable.

Chase the flies and dirt out of the reception-room. By the way, have you taken down the stove? Bet you have not.

The showcase—tabooed. We have sworn off of that showcase agitation. We have agitated ourselves into a lather and have not done a bit of good. Let the faded goods and fly-specked samples stay right there. We do not care a d——. It's your funeral, not ours.

Change your conversation. Cut out the phrase, "Is it hot enough for you?" That is the bummest piece of hot-weather conversation in the world. Keep your talk and your temper cool. Get the minds of your customers off of the subject of the little discomforts of the season. It does not help matters to keep the subject hot.

There are a lot of changes that can be made to good advantage. Look for them. Make them as effective as possible.—*Trade News.*

An Easily Made Repeating Back for Two Postcard Exposures on a Half-plate

The following is a very simple arrangement which I use for the purpose of taking two postcard negatives on a half-plate. With a suitable lens one could take two cabinet heads on the one plate. I think it better than the usual method. It is everlasting. And it is a simple matter to spring it out of the camera when you wish to take a full half-plate picture. The idea may be old, but I have not seen it published before.

Procure a piece of sheet zinc, with square corners and of size 6 x 3⅛ inches. I used a metal divider taken from an old dark slide. Mark it off as shown in Fig. 1. Sheet zinc may be purchased at a hardware store, any thickness, at about fifteen cents per pound.

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Then bend it as marked to form the shape and size shown in Fig. 2. This forms the plate divider: it fits into slots cut in wooden bars,

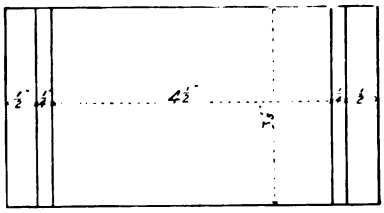


Fig. 1.

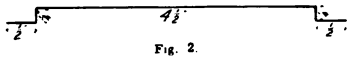


Fig. 2.

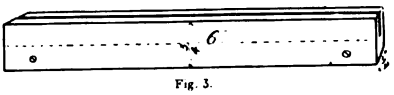


Fig. 3.

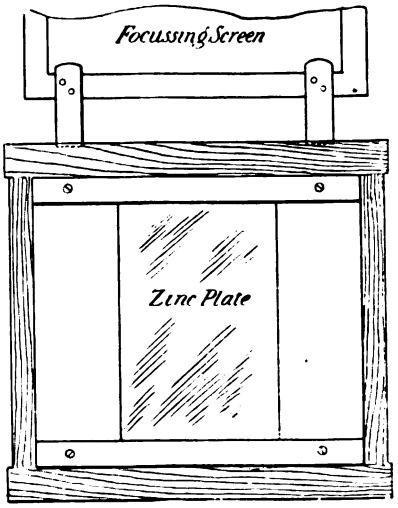


Fig. 4.

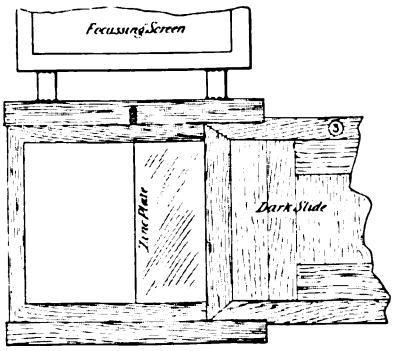


Fig 5.

which are screwed inside the camera back. The dark slide goes into position along the usual runners.

To make the slots, take two pieces of ¼-inch wood, each 6 x ¾ inches, and down one edge of each piece; with a fine saw run a slot ⅜-inch deep (Fig. 3).

These are attached inside the reversing back of the half-plate camera by four small screws. Dust a little graphite powder into the slot, spring in the zinc plate, and you have your repeating back. The above measurements are for the Thornton-Pickard "Imperial" camera, and may require alteration to suit other makes.

Figs. 4 and 5 show *inside* view of camera back with zinc plate, and the two wooden bars with grooves.

Fig. 5 is outside view of camera back, showing zinc plate in position for first exposure.—*T. P. MacNally in British Journal of Photography.*

PATENT NEWS

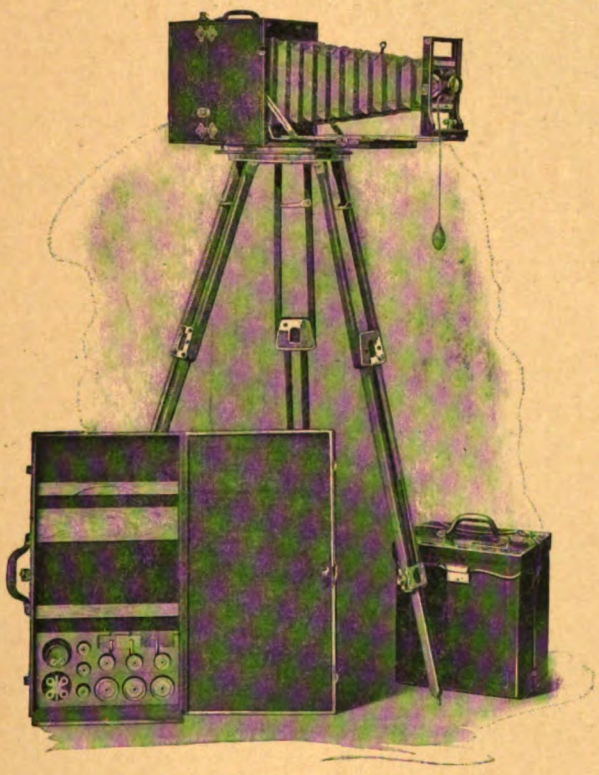
Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

M. P. Camera. F. B. Cannock. 1181432.
M. P. Camera. C. E. Akeley. 1181201
Film Camera. E. U. Wright. 1181713.
Shutter. H. C. Atwood. 1181304.
View finder. A. W. Hyler. 1181453.
Cellulose Acetate. H. Dreyfus. 1181857-60.
Printing. H. M. Pilkington. 1181163.
M. P. Machine. O. T. Price. 1181478.
Camera. L. Arkin. 1182237.
Camera. E. J. Bartells. 1182447.
Mutoscope. J. J. Kennedy. 1182280.
Exposure Corrector. W. Hood. 1182485.
Mask. Tobey & Flower. 1182060.
Projector. Gay & Duke. 1182556.
M. P. Machine. A. D. Stanford. 1182111.
M. P. Machine. Gamble & Odgen. 1182761.
M. P. Film. J. E. Thornton. 1183698.
Film Regulator. M. W. MacDonald. 1183705.
Film Winder. D. P. Whitesell. 1183705.
M. P. and Sound Machine. T. A. Edison. 1182897.
Exposure Meter. R. E. Steckel. 1183778.
M. P. Machine. E. Keen. 1183208.
M. P. Machine. P. F. Krug. 1183082.
M. P. Projector. F. H. May. 1182921.
X-ray Tube. R. H. Machlett. 14132 (reissue).
Camera. J. L. Prunty. 1184488.
Folding Camera. J. Lindner. 1184110.
M. P. Film. J. Campbell. 1184226.
M. P. Projector. W. H. Anderson. 1184607.
Print Square. H. F. Hoeffle. 1183977.
M. P. Machine. J. J. Dawson. 1184082.
M. P. Synchronizer. G. P. MacDonnell. 1184704.
Camera. H. J. Gaisman. 1184941.
Roll-holding Camera. J. Goddard. 1184946.
Shutter Control. R. H. McCartney. 1185337.
Shutter Operator. J. M. Olson. 1185237.
Camera Support. C. M. Suck. 1185448.

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THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII AUGUST, 1916 NUMBER 8



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Some negatives show up better when printed in black-and-white. Others require a Vandyke brown print to interpret their tone values. Remember that

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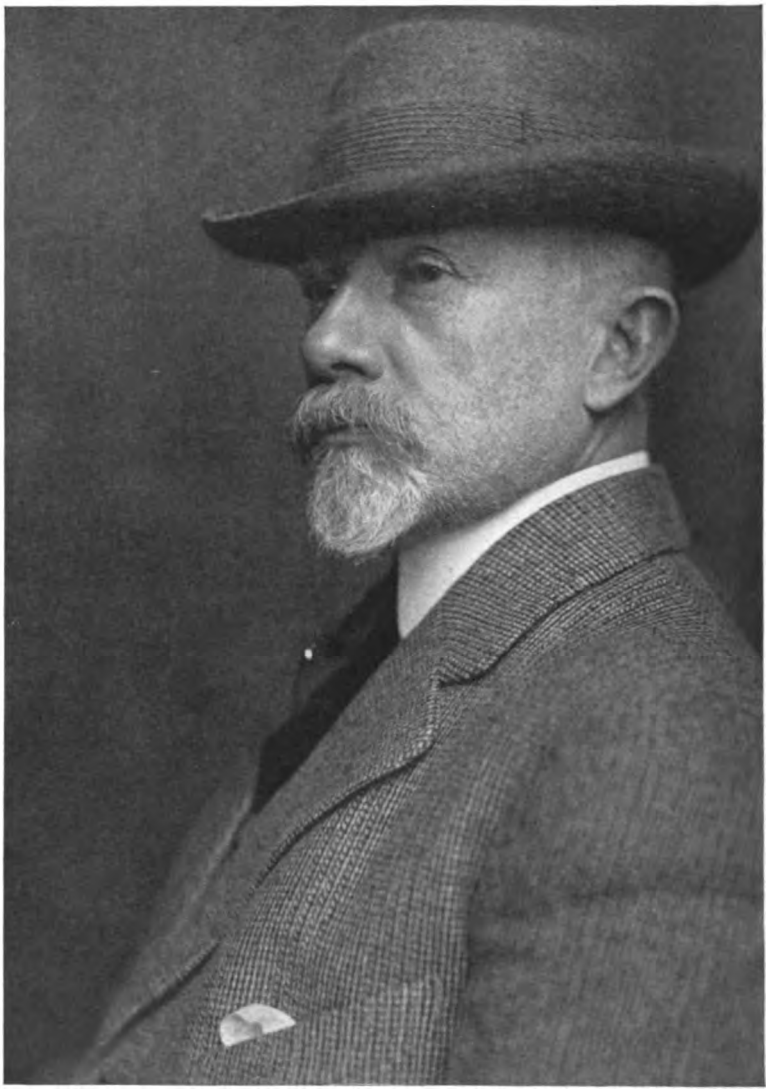
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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII AUGUST, 1916 NUMBER 8

OUT-OF-DOOR PORTRAITURE

By MARGERY L. HALL

IS it not to be deplored that the followers of this most fascinating phase of photography, *i. e.*, taking pictures in the open air, is almost entirely limited to amateurs. In fact, it is through the amateur who makes his hobby a serious art that most of the advances in pictorial photography have been made. His work, however, is usually confined to landscape composition, doubtless considering portraiture as something quite beyond his powers.

Occasionally professionals have photographed people out-of-doors, often with very beautiful results, but the inclination seems to be to treat this medium of portraiture as a pastime to be enjoyed after business hours.

In recent years the antiquated custom of maintaining a studio has been practically abolished. The photographer realizes that by going directly to the home he obtains not only a more characteristic likeness but a more attractive picture. In this connection it is rather surprising that more professionals have not recognized the opportunities afforded by out-of-door portraiture.

Let it not be thought the intention is to advocate this method of photography as a substitute for indoor work. Nevertheless, it presents a field for obtaining a natural likeness of artistic merit vastly superior to that of the average photograph.

Under no circumstances does a subject feel such perfect freedom and unrestraint as when posing in the open air. It is a delight to work with young children, for owing to the short exposure necessary they may be allowed to play about as if nothing so irksome as "picture-taking" was going on.

With the boy or girl who has reached the "awkward age," and is the despair of parents and photographer, the open-air treatment is more effectual in overcoming stiffness or constraint. The

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introduction of some favorite pet into the picture is found useful in diverting the attention of the child from himself.

It is human nature to wish to look as well as possible when posing for a picture. To this end the average person goes to the studio arrayed in his or her "best clothes." (This statement may more nearly apply to women, but it must be confessed that a man in a "dress suit" is a nightmare to the photographer.)

But, alas, these very clothes which the wearer hopes will add charm and beauty to the picture are the greatest detriment, for raiment which Fashion decrees as "stylish" seldom lends itself to pictorial effects. Again, it takes a very blasé subject to wear such finery without some degree of self-consciousness.

When working in the open air, in the midst of a garden, in the woods or fields, the patron has no desire to be "dressed-up"; consequently the result is a portrait of such freshness and spontaneity that it closely approaches that bromidic platitude a "speaking likeness."

To one who has confined his efforts to studio work, lighting the subject under natural conditions may at first seem difficult. All amateurish rules regarding the position of the sun may be ignored. The photographer should be careful, however, that the light does not shine directly in the eyes of the subject, causing a disagreeable squint familiar to all victims of the snap-shot. A gray day is perhaps the best time to work, though the fascinating shadow effects of a bright day must be sacrificed.

Since the sunlight cannot be altered to suit the subject, the obvious thing to do is to alter the subject to suit the light. To the inexperienced this method might seem to involve a great deal of moving about until both patron and photographer were quite worn out. This is not really the case. When one is trained by serious study and hard work the eye instinctively selects the spot most suited to the composition in mind. Always the artist should have a mental conception, after a careful study of the subject and surroundings, of the finished picture. He should then endeavor to compose this mental picture on the ground-glass of the camera.

Of course, some moving about of the subject is necessary, but this can be done by tactful suggestions. In no case should anything be said concerning the actual pose, for this would be fatal to a characteristic likeness. The successful photographer is seemingly engrossed in the mechanism of his camera, or some light conversation, but in reality is alertly awaiting some expression or attitude individual to his subject.

It is on the quickness of the eye to seize upon just the right monent for exposure, the moment when subject, background, light, all are harmonious, that the success of the picture depends. Nervous, wavering actions on the part of the "man behind" reacts on the subject with unhappy results.

The adage, "Experience is the best teacher," surely applies to the art of out-of-door portraiture, and the beginner is fortunate if he has professional models or friends to serve this purpose.

As to equipment, the same outfit used indoors may be used outdoors. It is well, though, to have everything as simplified as possible, to avoid all delay when working.

A tripod that can be depended upon to stand when placed is very essential. Whereas a metal one is lighter to carry, a wooden one is best for a heavy camera and windy days. It should, of course, be adjustable to any height.

Every photographer, amateur or professional, has his own idea regarding lenses. One thing is true, however, the price of a lens does not govern the finished print to the extent generally believed. It will be found that a very inexpensive lens, free from distortion, capable of diffusion, of long focus (in reference to the size plate used), and moderate speed, will fill every need of the out-of-door worker. A good shutter, admitting of instantaneous and time exposure, is indispensable.

The substitution of cut films for plates is everywhere meeting with favor, doubtless due to the growing number of home-portrait workers. Lightness and durability speak volumes in their favor.

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$6\frac{1}{2}$ x $8\frac{1}{2}$ is perhaps the best all-round size to use, especially for the beginner, who may find it more difficult to make a perfect composition on a smaller size. An 8 x 10 outfit is entirely too heavy to carry about.

The printing of an out-of-door negative is a revelation to the pictorial worker. There are always hidden gradations of light and shade which come as a pleasant surprise. As it is by the finished print the merit of the negative is judged, as much time and thought should be devoted to this end of the work as the actual taking. Here, again, the educated eye is more to be desired than the trained hand. A technical error may be overlooked but an artistic blunder is an eyesore forever. A study of the great paintings and an intelligent utilizing of energy go farther toward producing a photographic masterpiece than mere genius or "temperament."

And so, to all camera-workers who find themselves in a "rut," with the last portrait looking very much like its predecessors, the remedy of working in the open air is recommended. The variety of backgrounds and lighting effects thus obtained will ever be a source of delight and inspiration and a charming versatility will mark the finished work.

A PRECISION SHUTTER-TESTING INSTRUMENT[1]

By P. G. NUTTING, Ph.D.

A GREAT number of instruments have been designed for the testing of photographic shutters, some of the instruments being intended to determine the total period during which the shutter is open, while in others an attempt is made to measure the effective area of the opening at different periods of the exposure. Most shutter factories use a simple tester of the first mentioned type, consisting essentially of a uniformly moving strip of film or plate. If, however, the beam of light projecting the shutter opening is interrupted at a high known frequency, the area of the shutter opening may be accurately determined for every phase of its action, and thus the efficiency of the shutter can be calculated, the efficiency of the shutter being understood to be the relation between the amount of light admitted by the shutter during the exposure and the amount which would be admitted if the lens were fully uncovered to its maximum aperture during the whole period throughout which the shutter uncovers any portion of the lens.

Of the instruments which have been used for the determination of the efficiency, the best known are those designed by Abney and by Campbell and Smith of the National Physical Laboratory.[1]

In the Abney apparatus a beam of light from an arc is parallelized by a condenser, and against this is placed the lens with the shutter to be tested, a slit being placed over the shutter. Behind the shutter is placed a perforated rotating wheel, and the light, allowed to pass intermittently by the openings in the wheel, falls upon a rotating drum on which the sensitive film is placed (see Fig. 1). With this apparatus the diagram shown in Fig. 2 is obtained, this representing the opening of the shutter across the slit, the diagram given being for a roller blind shutter, which opens at one side of the slit and closes at the other. The duration of the exposure is given by the number of slit images shown, and these depend upon the speed of the rotating disk, which is determined

[1] *Communication from the Research Laboratory of the Eastman Kodak Company.*

[1] Abney, *Instruction in Photography*, p. 145; Campbell and Smith, *British Journal of Photography*, 1909, p. 894.

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by blowing a stream of air from a tube against the perforations, the speed being calculated from the pitch of the note obtained. To obtain precise results at high speeds with the Abney apparatus it would be necessary to rotate the disk at a very high rate and to have the perforations small and widely separated. The effect that might be obtained with enormous speeds with an Abney tester may be obtained much more easily by rotating mirrors.

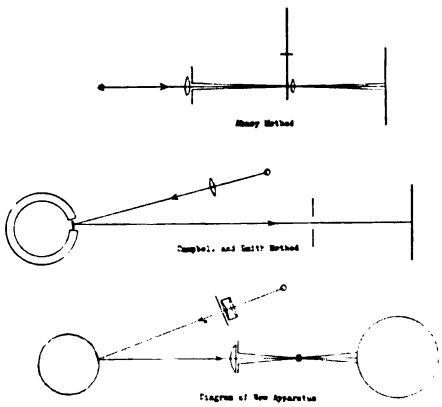


FIG. 1

Campbell and Smith photographed on a moving plate a narrow beam of light reflected from a mirror which was mounted on a vibration galvanometer so that it gave oscillations of known period, and the duration of exposure was read



FIG. 2

off from the number of oscillations shown on a falling plate. For obtaining the efficiency they used the same method as that of Abney, photographing a slit placed across the shutter upon a falling plate, but allowing the vibration galvanometer to make its record on the same plate at the same time, so that the record of the galvanometer is used as the time measuring apparatus in place of the syren used by Abney.

It is obvious that the best method of testing a photographic shutter would be to take a number of photographs of the shutter through its period of operation, the time of exposure of each photograph being small in comparison with the rate of movement of the shutter, and if these instantaneous photographs can be taken at known intervals, then we shall have all the data required for calculating both the efficiency and the duration of exposure of the shutter.



FIG. 3

In the apparatus described, the illuminating beam is reflected from a lightly mounted aluminium crown (Fig. 3) on which are placed twenty small plane mirrors held vertically on the face of the crown. This crown of mirrors is rotated at a very constant speed (50 r.p.s.) by means of a Leeds Northrup governed motor making twelve hundred revolutions per minute. The motor is

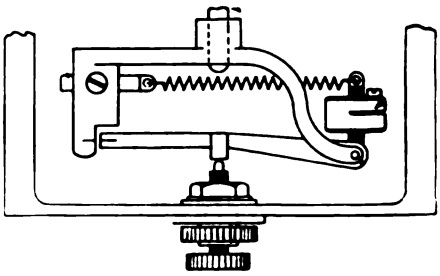


FIG. 4

governed by means of a centrifugal governor (Fig. 4), which makes and breaks the current, the system being very simple and accurate in operation;

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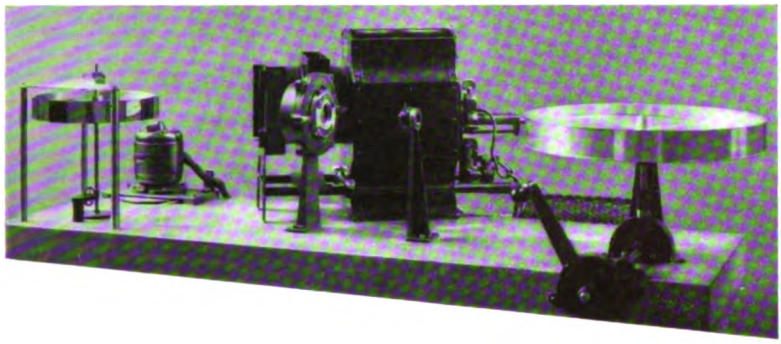
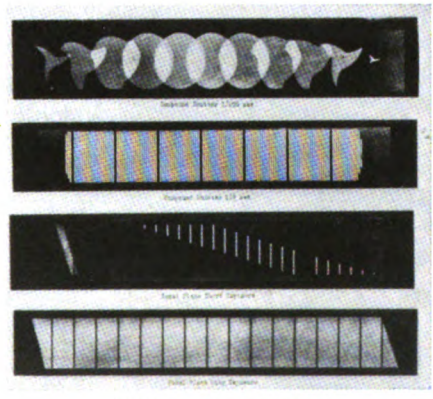


FIG. 5

by attachment of a chronograph we have found the speed of the motor to be constant with 50 per cent. variation in load or 5 per cent. in line voltage to within $\frac{1}{10}$ per cent.

By suitable gearings we are able to rotate the crown at fifty revolutions a second, and in order to determine the speed the shaft carries a worm and single gear which can be thrown into mesh and the revolutions of the gear wheel counted with a stop-watch. Since the crown carries twenty mirrors and rotates at fifty revolutions a second, we have a thousand interruptions of the beam per second, and this frequency does not vary by a thousandth part of itself. By increasing the number of mirrors from twenty to fifty and doubling their speed of rotation, it would be quite practicable to increase the frequency to five thousand a second, but we find a frequency of a thousand to be the most suitable for general testing.

The crown is illuminated by an arc lamp in a small projection lantern, the condenser of the lantern focussing an smage of the arc crater at the mirror surface. The duration of each flash is determined by the angular width of the light beam at the lantern condenser, as since the beam at this point is limited by a vertical slide 2 mm. wide, the width of the beam as it flashes by reflection past the shutter opening is about $\frac{1}{30}$ of the distance between the flashes, so that each exposure is about $\frac{1}{3000}$ second. The reflected beam falls on a simple lens behind which the shutter to be tested is held in a universal iris holder, and an image of the shutter is then formed by a small camera lens of 90 mm. focal length on the rim of an aluminium wheel 12 inches in diameter, around which can be fastened a band of negative cinematograph film. This wheel can be set in rapid rotation by means of a crank and gearing, and all that is required is to start it going at sufficient speed to separate the different images of the shutter just before the shutter is snapped.



FIGS. 6, 7, 8, AND 9

The wheel is enclosed in a light tight box so that the wheel and box can be readily lifted from the machine and taken to the dark-room for loading and development. Fig. 5 is a view of the assembled instrument with the case of the film wheel removed. The base plate (of cast iron) is 13 inches by 40 inches.

Now, if we place a shutter in this instrument, set at about $\frac{1}{100}$ second, and after starting the motor which drives the crown and shutter, check the

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speed to ensure that we have 1000 interruptions per second and release the shutter, then after development of the band of film we shall obtain the image shown in Fig. 6. Each of the separate images on this film represents a photograph of the shutter taken in $\frac{1}{3000}$ second. It will be seen that on release the shutter took $\frac{4}{1000}$ second to open, thus remained open for $\frac{4}{1000}$ second and finally closed in $\frac{3}{1000}$ second, the total duration of the exposure, nominally $\frac{11}{100}$ second, being $\frac{11}{100}$, during which the shutter was fully open for nearly $\frac{5}{1000}$.

By measuring the areas of the separate photographs by means of a planimeter and comparing them with the areas of the same number of photographs of the full aperture, we get the efficiency. Thus in the case given, the area of the measured photograph is 466, the area of one full aperture is 71, and therefore of eleven full apertures would be 781, and the efficiency would be $\frac{466}{781}$, which is 0.597.

The three feet of film can take only about fifty shutter images without serious overlapping, and in order to record shutter speeds of $\frac{1}{10}$, $\frac{1}{5}$ and $\frac{1}{2}$ second the image is restricted to a narrow band by inserting a 1 mm. slit in the front of the box in which the moving film is enclosed. To save counting the hundreds of images obtained at these low shutter speeds, one of the twenty mirrors was painted black so that the shutter images are given in blocks of 20; thus, Fig. 7 shows the test of a $\frac{1}{5}$ second exposure, showing 137 impressions of the image of the slit in blocks of 20.

Focal plane shutters can be measured by allowing the slit to pass in the same place as other shutters are mounted, when a series of images of the slit passing across the area of the lens opening are obtained. Then, if a straight line be drawn at right angles to the slit image the number of points at which this straight line is cut by the slit shows the extreme number of thousandths of a second during which the slit is passing across a given point on the plate. Thus, in the example shown (Fig. 8), the line is shown to intersect eight slit images, showing that the total exposure is $\frac{8}{1000}$ second at this setting of the shutter.

Fig. 9 shows a bulb exposure with a focal plane shutter, the slit opening across the plate in $\frac{12}{1000}$ second, the plate being fully exposed for $\frac{320}{1000}$ second, and then the slit closing again at the same rate as before, so that the actual time of exposure was nearly $\frac{1}{3}$ second.

For visual observation the film wheel can be replaced by a four-sided mirror having a similar stem. The use of this mirror enables a general idea of the behavior of a shutter to be quickly determined.

It is hoped to present some results obtained by this instrument in a later paper.

WHILE some men are planning an advertising campaign, others are getting the business by executing one.

TOO many employers worry more about what their employees are doing nights than what they are doing during the office hours.

THE man who kicks on punching a time-clock generally has a very good reason.

MANY forget that it takes more strength to stay on top than it does to get there.

THERE are a lot of extravagant women in the world, but there aren't half enough to furnish excuses for the men who have failed through lack of good ambition.

WHEN a man fails, he blames others, and others blame him if he makes good.

A BAD potato will ruin a bin of good ones before you can fill it. A dissatisfied employe has the same effect on the business of a house.

THE fellow who talks all the time about working overtime hasn't much time for anything else.

EMPLOYEES who don't earn more than their salary now will never have more salary to spend after pay-night.

IT'S up to many reformers to reform their own theories.

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PHOTOGRAPHING IN COUNTRY HOMES

By JOHN KIMBALL CHASE

I AM now old and blind, but I have done more successful photographing in country homes than any other man in New England, perhaps more than any other photographer in this country.

At the age of twenty, in the old ambrotype days, I started with a photograph car from Sunapee, N. H., and I travelled as a professional through many towns and cities in New Hampshire, Vermont, and Maine, finally settling in the adjoining towns of Oxford and Norway. I took photographs of the old, sick, and dead in their homes. I have taken thousands of photographs in country homes under all conditions, and in no case did I fail to get satisfactory pictures. My success became so great that many persons came long distances to solicit my services.

I grew old in harness; I grew blind in harness. In the old wet-plate days, the colors of ferrotypes and also negatives were fixed in a solution of cyanide of potassium. The fumes worked into my system and settled in my eyes. I allude to the foregoing not in egotism, for I am too old, but to show that my experience has been extraordinary. A brief description of the more important points of photographing in country homes may be interesting and helpful.

I will pass over cameras, lenses, plates, and films, because these matters have already been explained in this magazine at length. On these points, though, I may say, my experience has convinced me that the more simple the camera and shutter the more certain the chances of success. There are too many parts that may be a little out of position in the more complicated apparatus.

The most important point is to go slow and be sure you are just right in every detail as your progress. You must use great care every moment if you want success at the end. This applies to every part of photography.

Concerning lighting, one window in the home is all you need. It is best for this window to be on the north side, or at least that the sun does not shine directly into the window. Adapt your methods to the conditions you find, keeping in mind the principles and just what you want to get and the best way to get it.

If the sun does not shine into the window, cover the lower sash with clean white tissue-paper, which may be fastened with common pins, leaving the upper sash unobstructed so that the principal light may illuminate the subject from an angle of forty-five degrees.

This illumination is important. If there is too much side or top light, or light from other windows, the likeness may be somewhat distorted or with some feature exaggerated; that is, the likeness may be fairly good but not perfect. I once saw six photographs of the same person under different illuminations. These did not look like pictures of the same person, and the only correct likeness was the one taken under the illumination stated.

If the sun shines on the window, cover the whole with white tissue-paper, placing a double thickness over the lower sash. Place the chair about half way from the centre of the window to the side furthest from the camera and about three feet from the window. If needed, move the subject a very little for better light. The time of day, the position of the sun, reflections, and many other matters may change the light slightly.

For a background, if the clothing and hair are dark, a gray blanket may be stretched smoothly three feet or so behind the chair. If tbe clothing and hair are light, a darker background may be used with advantage. The idea is to have the background a little out of focus and of a color which will contrast artistically with the nature of the subject. It is more satisfactory not to use the room behind the subject as a background. It will not be in focus with a

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portrait lens, and will not be properly illuminated.

An assistant may hold a sheet three feet or so from the side of the subject furthest from the window. The strong light from the upper sash should illuminate one side of the subject and gradually shade toward the other side. The sheet reflector will prevent the shadows from becoming so dark as to lose details. Use this reflector with care, or the brilliancy, the snap and force of your portrait will be lacking. Too little reflection is a great deal better than too much.

If there are other windows, the curtains may be drawn and the reflector used. The cross lights from the other windows make the picture flat and often cause distortion. This shows more clearly when enlargements for crayons are made.

If the subject is old, sick, or nervous, an assistant may be used as a model in focussing the lenses. Then the real subject, fresh and unfatigued, may be posed and photographed in an instant.

The same directions apply, in a general way, to photographing deceased persons. If the picture is to be enlarged, with eyes painted in to resemble life, it is a great advantage to open the eyes before taking the photograph so that the artist may have a good idea of the size and color of the eyes. It is also helpful to take a photograph of some other member of the family having similar eyes.

I have taken many photographs, in metallic coffins with glass fronts, of persons who died from contagious diseases. The only difficulty is to avoid reflections from the glass.

These suggestions are offered for persons wishing to produce the best possible results when there are no skylights or screens to aid.

I will close this paper with a few remarks about taking views of country homes. It is scarcely necessary to state that when the sun is so as to shine into the lenses the negative will be fogged, but it may not be as well understood that when the sun is directly behind the camera the view will be flat and unsatisfactory. To produce the most clear and brilliant photographs, the sun, subject, and camera must form a slightly modified right angle, with the subject at the apex.

When the sun shines, the country dwelling, partly covered with flowering vines and surrounded with shrubs, presents a thousand beautiful effects in lights and shades, which are constantly changing as the sun moves in its daily path. With care and patience, watch these ever-changing lights until you get the right combination. The best landscape photographer I have ever known was the late B. W. Kilborn, of Littleton, N. H. His views are famous upon both hemispheres. He would study one subject for days, sometimes for weeks, until he understood the possibilities. Then he would take a view that would become the wonder of two continents. With the same care and patience you can take views that will astonish yourself as well as your friends.

If you wish to make a photograph of a large number of persons with a country home as a background, a cloudy day is best. Choose a time when every person can look in any direction in an easy, natural manner. Pose and photograph carefully and you will get a group picture with every face as clear, white, and natural as though taken under a skylight. In fact you can get a more satisfactory picture of a large group out-of-doors on a cloudy day than under the most expensive skylight. The light is just as even and possesses a marvellous softness.

The best views I have ever seen were overexposed; the exposure was two or three times as long as necessary. Such negatives must be developed with care. Pour twenty drops or so of a solution of one ounce of bromide of potassium in a pint of water into the developer. Then slip in the plate and watch it closely. If it appears too quickly, add more bromide, to prevent fog, clear shadows, and restrain development. If the image appears too slowly, do not worry, for a few drops of your concentrated stock developer will start it or you may finish the development in a new developer. This was Kilborn's

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secret, as I afterward learned. The later part of my business life I made it a rule to overexpose all my negatives. It adds to the development, but the reward is sure in added richness. If the development is right, the negatives will have a wonderful wealth of detail in the shadows, without fog, which is to be obtained in no other way.

THE MOTION-PICTURE PHOTOGRAPHER'S PRIVATE THEATRE

By ERNEST A. DENCH

ALL the plants of the motion-picture producers are equipped with a private theatre for the purpose of trying out each new production before same is released for public exhibition. The other day I had an opportunity of watching two film editors at work.

A drama came on the screen and instantly two pairs of eyes other than my own were glued to the screen.

"That scene can do with a sub-title," commented the first one after a minute or so.

"Yes," agreed the other, "the whole meaning of the play will be lost unless it is run in."

"We'll have to do some cutting here," remarked Number One a little later.

"The action drags on too much," agreed Number Two; "cut out forty feet."

"That letter has appeared before; the public will get fidgety if they have to sit it out again."

"Right you are; cut it to a flash."

"Ah, here is something which does not carry the story forward a bit."

"Out with it, then."

A wrongly phrased sub-title now arrests their attention.

"Have it out and get the sentences correct," ordered Number One.

"I'll see that it is first rewritten before being taken to the titles room," promised Number Two.

This will give you an idea of what transpires in this most mysterious of all places, and you cannot succeed in your work without a motion-picture theatre on a similarly miniature scale.

The first item of importance is the projection machine, the prices of the standard makes ranging from $250 to $300. There are now several reliable miniature machines on the market which are admirably adapted for trial runs, and same can be purchased for about $100, which price includes all accessories. The only difference in the standard machines is that they have a longer throw on a larger screen.

The authorities in various parts of the country insist upon the projection machine being enclosed in a fire-proof booth, so if there is an outbreak of fire it cannot spread further. Here an expense of $65 is involved, but it is worth it in the interests of safety first. This booth, made of galvanized iron, gives the operator plenty of room in which to work and is shipped in parts, the whole easily being set up with nuts and bolts.

Carbons are needed to run the projector, and it is cheaper to buy these by the case, which contains one thousand. They cost from $17 to $44, but prices vary according to market conditions.

The next important link, is the screen. In the days gone by a tablecloth and bedsheet have been used, but science has come to the rescue, and now there are screens and screens, and to obtain the best results it will be necessary to pay about one dollar and a half per foot for the material.

There remains one connecting link—the light by which to throw the pictures on the screen. If electricity is available, the current can be used. Failing this,

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a calcium gas-making outfit would be in line. It means an expenditure of $35, but you can manufacture the gas without forced pressure, furnace or hot water. Five minutes' notice is all that is necessary. It has a capacity of 700 candle-power.

Focus the projection machine exactly in the middle of the screen, not an inch to the right or the left, or an inch below or above. If this is not attended to, no matter in what advantageous position a spectator sits he will either have to hold his head up high or else the players in the picture appear unnaturally long and slim. The rays of light take a straight path, and if they are compelled to turn aside a peculiar, annoying effect is produced.

In selecting a suitable lens the size of your room, make of projection machine, the length and height of your screen and the distance from the operating booth to the screen must be taken into consideration. It is false economy to purchase a cheap lens, and when ordering always furnish the supply firm with the foregoing particulars, as they can then execute your orders intelligently.

Carelessness is oftentimes responsible for the film jumping the sprockets and many breaks occurring, and you should make this your creed:

"Every time the film leaves the sprockets I will halt the projector in order to set it right."

"When stopping the machine I will throw off the switch.

"When rewinding the films, as through with, it will not be my fault that they are scratched, thereby shortening their life. I shall carefully but firmly exert a pressure against the disks of each single reel I am in the process of unwinding. I shall find it evenly wound and no damage done despite the speed at which I have proceeded."

The standard speed at which pictures are projected is sixteen "frames" to the second. There are sixteen of these "frames," otherwise tiny pictures, to each foot of film, and each reel takes about eighteen minutes to unspool. If projection is faster, things in the film move at a rapid, mechanical pace, while explanatory matter is snatched off before it can be grasped.

You will need a tool outfit, which should include cement for mending broken films, a file for sharpening carbons, lugs, reels and machine oil.

MANAGING THE LIGHT

WE have always had in our midst a certain number of pessimists who proclaim the decadence of photography as a profession and the absolute impossibility of anyone obtaining a decent living by portraiture. Against these we have to set the very encouraging fact that every week we receive one, two, even four sets of plans for new studios for criticism and counsel, so that after all it would seem that the portraitist is still with us and means to stay. He may have to work harder for his money and to give his clients better value than some of his predecessors did, but we think that we can safely say that the professional photographers as a class stand better with their fellow-townsmen today than they ever did before. The demand for new studios being acknowledged, a brief outline of the principles involved in their construction, especially with regard to control of the light, will, we are sure, be acceptable to many of our readers, especially those in the colonies and other distant lands where expert advice is not readily obtainable.

In the first place it is self-evident that before we can control the light, the light must be there to deal with, yet this fact is often overlooked by unskilled studio builders, who imagine that by some ingenious combination of glass, blinds,

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and reflectors any position may be utilized for the erection of a studio. It is true that within certain limits good work may be turned out under unfavorable conditions, but it is foolish to go seeking for trouble by building a badly lighted studio, if there is any other alternative. As an illustration of this we may recall the case of a studio which we were once asked to inspect. Although constructed strictly upon the lines laid down by Mr. H. P. Robinson for a single slant studio, there was an excess of top-light. There was nothing wrong with the studio if the light could have reached it, but unfortunately there was a tar-coated wall nearly as high as the studio less than 5 ft. away from the glass. This was an extreme case, but there are often buildings, trees, or other obstructions which do not seem to be in the way when the site is open, yet have a very detrimental effect upon the lighting when the studio is actually built. An example of this came recently under our notice in the case of a studio erected in a garden. There was a clear north light along the side, but at the eastern end of the land was a row of tall trees which effectually prevented any front light falling upon the sitter. The negatives taken in this studio were, of course, very unevenly lighted, decent results only being obtainable at the cost of very long exposures. To avoid such troubles it is a very good plan for the studio designer to take up his position on the spot which will usually be occupied by the sitter and to note the amount of clear sky which can be seen and the angle at which the light will fall. Very often a great improvement in the light will be secured by raising the level of the studio so as to overlook any near obstacles. This raising may be anything between a couple of feet and a sufficient height to allow a store or workroom being placed under the studio itself.

The actual form of the studio must to a great extent be determined by local circumstances, and the old ridge-roof style with top and side lights seems still to be the favorite. In many instances, however, the single slant is preferable as it is less liable to leakage, does not afford a lodgment for snow, and is more proof against a hailstorm than the older form of skylight. Again, the vertical or high side-light as designed by H. P. Robinson for "the studio of the future" has its own particular advantages and is well worthy of consideration when the question of studio building or adapting has to be faced. The least desirable form of studio is one having top light only. Although good work can be done in such a place, the effects obtainable are limited, and even these are possible only when the studio is a large one.

An important point to be remembered in studio lighting is that a slight alteration in the position of the sitter or of the camera will often effect a much greater change in the lighting than a rearrangement of the curtains or blinds. There is no greater enemy to good lighting than the old heavy background stand, which, in conjunction with a camera the size of a small pantechnicon, keeps the operator and sitter in a straight line which runs parallel with the side light, thus necessitating a complete rearrangement of the blinds for every variation in lighting.

Broadly speaking, there are two principal schemes in studio ligthing, one being what is called, for want of a better name, a high key, and the other a low key. Examples of this may be found in the lighting usually adopted for sketch portraits and "Rembrandts" respectively. For the former style it is necessary to illuminate the sitter pretty uniformly even to the point of flatness, and then to open a blind in such a position that a high-light is thrown upon the points which it is desired to bring into relief. This system naturally permits of short exposures, and is suitable for the portraits of children and ladies in light drapery. The other, or low-toned lighting, calls for a reduction to a minimum of the light falling upon the sitter. A certain amount of diffused light should be present so as to avoid unrelieved shadows, but the main lighting must come from a rather small opening, a diffusing screen used to avoid harsh contrasts. As a general rule it must be borne in mind that the nearer the sitter is placed to the light the stronger are the contrasts, and a

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movement of the sitter of only a foot or so will often secure the desired effect.

It is a great mistake to fix the blinds or curtains close to the roof in a lofty studio, for in such a position they are almost useless for any delicate control of the light, which becomes too diffused by the time it reaches the sitter. A good plan is to have a light framework which carries a set of both dark and white blinds which can be brought close to the sitter, making what is virtually a small studio within the large one. With regard to glazing, clear glass, ground or rolled plate have each their advocates, but we are inclined to think that clear heavy sheet has the preponderance of advantages. It is easier kept clean and does not reduce the light as the other two kinds do. Even if sunlight occasionally strikes the glass, a better effect is obtained with clear glass and papier mineral, and the latter can always be removed on a dull day.

The management of the reflector is a point on which many operators go astray, the most common mistake being to attempt to use a reflector from a position where it receives little light, whereby it has to be brought so close to the sitter that false lights are produced. A larger surface placed at a greater distance will light up the shadow side more evenly, and can usually be placed so that it will receive sufficient light. The head screen is a useful device, and may be used for other purposes than screening the head; it is very handy for shading white drapery without interfering with the lighting of the face.

Artificial lighting for the studio has made great strides in the last year or two, and in the near future we may expect to see still further improvements. When a single source of light is used great skill is necessary to prevent hardness unless the greater part of the light is wasted by diffusion and reflection.—*British Journal of Photography.*

THE STRAIGHT PHOTOGRAPH, AND WHY

WE hear a great deal nowadays about the straight photograph, and sometimes the term is accompanied with contempt, and references to control and the incumbent advantages afforded by such means It is not intended in this article to refer to the latter, but to indicate just a few claims that the straight, untouched print possesses, claims that are for the most part overlooked by the majority.

In the first place, the worker who makes up his mind to produce "straight" prints only will have to confine himself to a definition of the word "straight." We take it that there must be no attempt at control. At no cost must the composition be in any way altered or modified, and the only hand work permissible on negative or print is simple spotting out of pinholes. This to the worker who prints his foregrounds from one negative, his principal object from another, and his sky from a third may seem rather like cutting off our nose to spite our face, or sacrificing the ultimate artistic value of our work to a mere whim or principle. Be it so, it is a question for each individual to settle for himself.

Now, to lovers of photography there is a certain charm about a straight print, and the print itself carries a testimony to the artistic skill of the producer. The composition had to be found ere the plate or film could be exposed, and the picture with all its beauty may be termed a record of something that is beautiful, and impressed its producer with a desire to record it as a picture. Thus in the first instance more artistic perception was needed to view the scene as it would appear in the mental vision than by combining two or more pictures indifferent in themselves into a possible whole.

The man who sets out to make what we may truly term "pictorial records"

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will have perhaps to pass by many compositions that a little control or combination with others would have presented as beautiful pictures.

It is not intended to decry or belittle the particular artistic principles or ideals of those who practise modification of their results, but rather to indicate where straight photography finds its claim. The danger is that we may with the control methods lose sight of the fact that we are photographers, and that such methods sometimes represent brush work in a rather crude form. To be successful in any realm of photography one thing may be regarded as an absolute essential, and that is a study and appreciation of the particular branch that has the greatest claim on out interest. In pictorial work we study with a view to recreating in the form of pictures what most impresses us, and it is the aim of the photographer who scorns to resort to control methods to bring into his pictures —or perhaps it would be more correct to say records—the spirit of natural scenes as they impress him, rather than to build up pictures from two or more negatives.

We sometimes hear a great deal about the limitations imposed upon the pictorial worker who does not resort to the modification of his results. It is certain that if we have to find our pictures in nature we may come across many otherwise good compositions but certain flaws existent in them ruin the artistic value of the picture as a whole. Such things as telegraph posts, signs, and a host of details of a like nature are apt to appear very conspicuous, even if they happen to be quite in the far distance. A controlled picture would have such things obliterated or diffused, but in cases where such work is objected to as against the principles of the author they must either be focussed out or the picture passed by.

Another point that we must also consider is that far fewer compositions in nature as a whole lend themselves to artistic treatment than may be supposed. It is quite possible that the worker will find his year's output of "straight" pictures far less than would be the case if he modified his work to the extent that inferior pictures were made passable, but at least he will have the satisfaction of knowing that his work such as it is is a direct copy in monochrome, with the tones, values, and lines correct of the landscape as he viewed it at the time of exposure and as it is in actual existence.

Yet another point comes in for consideration when dealing with the question of straight photography, *i. e.*, that of technic. It is in the technical quality of the print that the beholder will find the greatest appeal. The picture will depend for the correctness of its tonal values and the truth which it is to convey of the character of the original scene upon faultless technic. There is a tendency upon the part of many workers to assume that an exposure reasonably correct will give us a perfect negative. This is not so; it will certainly give us a negative, but most likely one to which the adjective could not be applied. The one and only guarantee that the utmost and best possible has been got out of the subject is a perfectly exposed and correctly developed negative. No photograph is going to be of high artistic standard unless this necessary factor has been incorporated in it, and without it no subject has had sufficient justice done to it. Guesswork is not enough, and no plate or film made has sufficient latitude to enable us to gain as good a result from a haphazard exposure as from one correctly timed with the aid of an exposure meter or calculator, and if this fact were more widely recognized and carried into actual practice we should hear far less about orthochromatic problems and the bad rendering of tones by ordinary non-ortho plates, or films of the ortho types used without a screen.

In bringing these notes to a close, we would again point out that it is not in our purpose to belittle the controlled print, but rather to indicate the straight print as having claims often overlooked in favor of the former. To many photographers the idea of introducing anything into the composition that was not actually there at the time of making an exposure is abhorrent, and to them the straight print, using the word in its widest sense, makes the greatest possible appeal. It is often that we have seen

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abundant evidence of control in pictures that would have been obviously far more effective without it, and it is here that the straight print scores. If there is any trace of artificial means being applied, its end is a failure, and the work as a whole fails because it is so evident. The straight print, be its faults many or few, according to opinion, steers clear of this defect. It stands for what it is, a simple, direct, straightforward piece of photographic craftsmanship, to which is coupled an artistic ideal of the best that the medium will allow.

Much of the control that is in evidence in pictorial work would not have been needed at all had a little forethought been shown, a slight alteration in standpoint, a little more care in giving the exposure to catch some effect at atmosphere really there at the time, or to obtain clouds and landscape in one negative instead of having to combine the two. Which stands out as the greatest success—or perhaps we should ask, which bears evidence of the soundest photographic craftsmanship—the straight photograph containing all essentials, or the controlled picture having them introduced by artificial means? We leave the answer to the question with the reader.—*Amateur Photographer.*

HATS IN PORTRAITURE

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

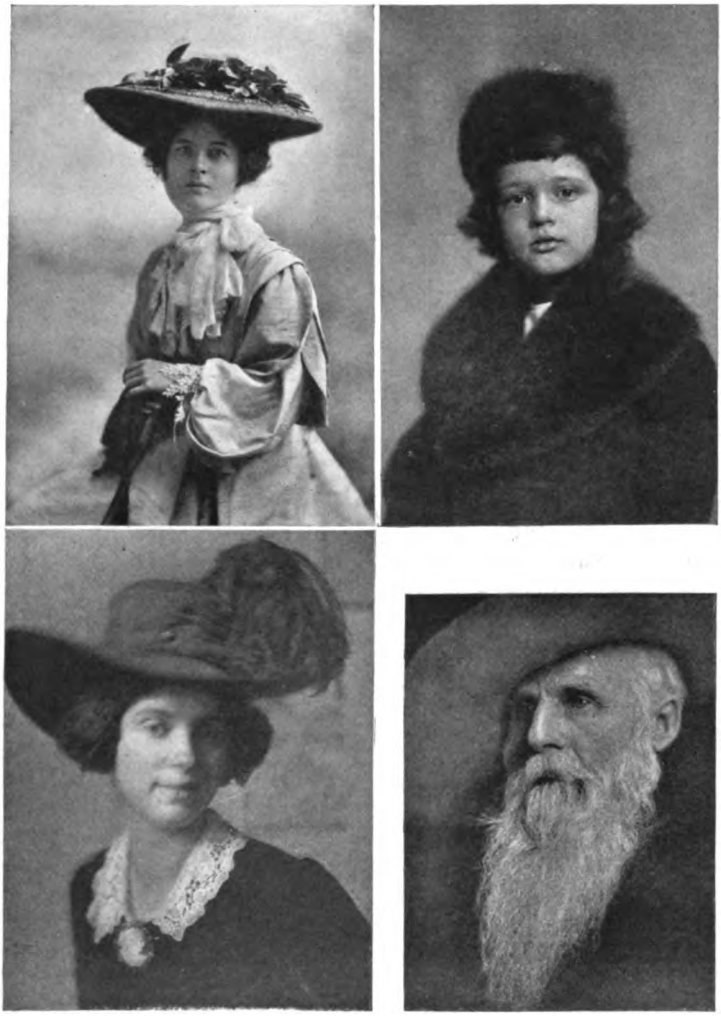
As a hat forms a rather important note in our street apparel, portraiture cannot very well get along without it. I believe most operators wish they could. It is at its best a rather awkward and cumbersome adjunct, that easily becomes obtrusive and does not easily lend itself to pictorial effects. In most cases a portrait is not improved by the introduction of a hat.

The stiff hats of men are particularly unhandy. There is nothing beautiful in their shape or texture. The stovepipe and derby should be avoided if in any way possible. There have been portraits painted with men wearing opera hats, but it needed exceedingly clever management to make them effective. The hard lines were invariably lost in the blackground, and the form was merely suggested by the vertical streak of high-light. The only way I can think of is to let the gentleman carry the hat in his hand. Then its lines may tell, particularly if the hat is half hidden by the figure, as that would break the undesirable parallelism of lines.

The slouch hat is easier to manage. It is pliable, the play of light and shadow can be controlled, and the outlines are softer. If you show the entire hat in profile, place it as near to the upper edge as possible (Fig. 12). It will produce more interesting shapes in the background. The three-quarter view is much better. In Figs. 6 and 14 it has been twisted in a picturesque mass which in a vague way helps to suggest the character of the wearer. But the most profitable way is to utilize the hat, if it be big enough, as background pure and simple, as Stieglitz has done in Fig. 4. If applied in that fashion it really lends a picturesque feature to the entire portrait. And my advice, therefore, is *to use hats as the immediate background of faces whenever an opportunity offers itself.* It is the safest and most artistic way (Figs. 8 and 10).

This also applies to ladies' and children's hats. It will, however, prove more difficult. Ladies are generally very proud of their hats. They are showpieces, and they wish them to be seen. Some of the hats are pictorially simply impossible. They cannot be subdued. And if a lady insists on a portrait of

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1. By Mishkin Studio
2. By Bessie Buehrman
3. By A. F. Bradley
4. By Alfred Steiglitz

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By OTTO EHRHARDT
COSWIG, GERMANY

By D'ORA
VIENNA

By L. KARL STUDELMANN
LEONBERG

By HERM BAHR
DRESDEN

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By C. J. VON DUHREN
BERLIN

By CAROL NOVAK
BREMEN

By PIEPERHOFF
LEIPZIG

By ANNY HEIMANN
CHARLOTTENBURG

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5. By Genre

6. By Fleckenstein

7. By Franz Grainer

8. By Adelaide Hanscome

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her hat rather than that of her face, patiently follow her whims. There is no way out of it. You cannot give her both.

I fear it would demand a large amount of tact and diplomacy to induce a lady to carry a new hat in her hand or to place it on her lap, and there would really be nothing gained by it, as a lady's hat is often such a confused, shapeless mass that it would interfere with the other embellishments of the gown. Persuade your fair sitter to remove her hat whenever you can; but if this should prove impossible, try and make the best of it.

See if you cannot use it for contrast. The hat may be either lighter or darker than the bodice. Then with adequate light arrangement it will easily take its proper place in the tonal composition (Fig. 2). No matter if the bodice of this lady were white or black, the hat would look well in either case. This also can be noticed in Fig. 1. Fig. 13 represents an absolute failure so far as the management of the hat is concerned. It is an indistinct mass with sharp and ugly outlines that should have never been taken.

Frequently the material employed in the construction of the hat offers in itself decided notes of contrast (Figs. 5, 7, and 13). This facilitates matters. In Fig. 13 it is rather the result of light arrangement than of the actual difference of material. But Fig. 5 is an excellent example. There would have been too many white spots if the hat had been tilted the other way, as in Fig. 7. The plumes in Fig. 7 are effective but simply because there are so many light tints in the picture. If the background or the lady's sleeve were dark, and the sweep of the suede gloves missing or darker in value, the plumes would become exceedingly obtrusive.

Uniformity of tint in the hat and bust are apt to bring out the face more strongly (Figs. 3 and 11), but the effect is more monotonous than otherwise, as seen in Fig. 8, for instance.

Painters have frequently used the hat as a shadow maker. I do not believe that this is of any value in photographic portraiture, as people do not wish to see their eyes shaded. If done in a delicate way, as in Figs. 1 and 2, it is beautiful. But as soon as it is done too much it becomes detrimental to portraiture. The shadows of a hat, however, can be used to great advantage as an eliminator of details in the hair (Figs. 1, 2, 10, and 11).

Fig. 10 is rather an odd composition. The hat is really the principal thing in the picture, and yet it does not interfere with the expression of the face. The hat, sure enough, is eccentric in shape, but not more so than many other milliners' productions. Whenever you come across a similar hat make the most of it. You will surely produce a quaint picture, but is in no way a standard; it merely shows that the lines of a hat are, after all, its most important feature.

The hats in Figs. 2, 7, and 13 form a similar conspicuous note. In the other pictures they do not attract any particular attention. Fig. 2 without the hat would need a completely different composition. It dominates the entire upper part of the picture. Miss Buehrman realized its value as a shape and mass. She had the advantage of a fairly picturesque piece of headgear. Grainer accomplished the same with a very ordinary sort of a hat. Mishkin sacrificed too much to the hat. The shoulder and the upper part of the hat have absorbed all the available highlight, and the face is squeezed in between them. It is a brilliant piece of work, but rather a study than a portrait. If a sitter is ready to order copies of a dozen different poses, this one will pass, but if only one pose is wanted, I fear it won't be considered.

Fig. 9 depicts a young lady fixing her hat. It is a charming picture, such as French amateurs are found of making. It may possibly be available in portraiture, *i. e.*, theatrical portraiture. You will notice that the young lady is specially costumed for the occasion. It would not look the same if she were dressed in ordinary street apparel.

A hat is, after all, meant to serve as a protection and adornment of the head, and it should be depicted when it is crowning the head, at least where ladies are concerned, or not at all. The latter in most instances is the preferable way.

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9. By P. BERGON
10. By R. NACHFOLGER
11. By R. DÜHRKOOP
12. By R. DEMACHY
13. By MISHKIN STUDIO
14. By NOTMAN AND SON

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CHEMICAL FOG: AN INSIDIOUS FOE

By J. H. WATTS

WE are constantly being advised to protect our plates and films from the action of light until the hypo has settled once for all the fate of the negative; and the advice given is both sound and timely: sound, because no negative which is in any way what we call light-fogged can be regarded as perfect—in fact, it is generally very imperfect—and timely, because the amateur, dealing for the first time with such extremely light-sensitive substances as the emulsions which the plate-maker prepares, can hardly have impressed upon him too strongly their nature and the precautions which he must take to protect them.

Fog is the deadly enemy of the photographer; but light fog is not the only form it takes. It is the most common, that is all. The other kinds of fog, and there are more than one, are lumped together under the collective title of chemical fog; and it is to warn the photographer against this section of his enemies that this article is written.

Excessive strength in the developer may cause chemical fog. Any great excess of alkali or of alkaline carbonate beyond that given by the maker in his instructions will lead to it. The presence of any free alkali at all in the case of certain developers, such as amidol, leads to the formation of chemical fog. A developer which is not too energetic at ordinary temperatures may be quite strong enough to cause fog when it is at all warm.

Another cause of chemical fog is the use of an excessive proportion of sulphite. It is only of recent years that photographers seem to have become alive to the injurious action of too much of this very useful salt. Speaking generally, the published formulæ should be regarded as giving the maximum sulphite which should be present; less than the quantity given is, on the whole, to be preferred. The action is more manifest, when development is prolonged, as in the case of slow tank development. In order to prevent staining in such cases with a very weak developer, the recommendation was made to dilute the developer with a solution of sodium sulphite instead of with water. The result was that the negatives obtained by the method were never so clean and bright as those obtained by the ordinary form of development. It would be better to use plain water, and, if need be, to use a stronger developer applied for a shorter time.

Chemical fog also shows itself when development—even with solutions which in the ordinary way are quite satisfactory—has been unduly prolonged. The developer in the case of under-exposed plates has little image it can develop, and consequently there is little or no bromide formed in it, as there is with a fully-exposed plate. This bromide would moderate its energy and so prevent fogging. In its absence the full strength developer applied for too long reduces the silver even where the plate has not been exposed. This fog is often reddish in color on looking through it, and may give the negative a reversed or positive appearance.

One form of chemical fog is an insidious one because its cause approaches literally on the wings of the wind. Impurities in the air may lead to the injury of the sensitive film just as effectively as impurities in the solution. When we remember the composition of the emulsion which is put upon the plate we can easily understand this.

In sulphide toning, we convert the image into a salt of silver which can be attacked by sulphuretted hydrogen and turned by its agency into silver sulphide. There are many silver salts which can be used for this purpose, among them silver bromide, silver chloride, and silver iodide. Now these are the sensitive preparations which are used in plates, films, and papers: and it follows, therefore, that such preparations can be darkened by the action of sulphuretted hydrogen

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—just as in toning a bromide print the bleached image is darkened by sodium sulphide, which is merely a convenient method of applying sulphuretted hydrogen to it. There is no need for the sulphide to be in liquid form; gaseous sulphuretted hydrogen is quite capable of acting in the same way, and it is from gaseous sulphuretted hydrogen that we must protect our sensitive materials.

Such sulphuretted hydrogen may have two likely sources of origin. It may proceed direct from the sodium sulphide which we keep in stock for toning purposes. This has a smell of rotten eggs, because it gives off sulphuretted hydrogen, which reaches our nose. In like manner it may reach our plates and papers. It may not be so sudden in its action, for it has to work its way through boxes and wrappings; but sooner or later, if there is an appreciable quantity of sulphuretted hydrogen in the atmosphere which surrounds the plate box, it will make its way in, and do harm. The direction of its approach is indicated by the fact that such deterioration as is caused in this way starts at the edges of the plates and works inward.

The other likely source of contamination of the air with sulphuretted hydrogen is from gas fumes. The quantity may be very minute; but if it is allowed plenty of time to act, as it may be when plates are put on one side for weeks or months, it will make its presence felt.

Moreover, it may exist in larger quantities than we realize at the moment. Let anyone go up some steps to the top of a room in which gas has been burning for some time, and note how hot and foul the air is near the ceiling, although those who are in the room down below this may not be able to notice such a thing at all. To them the air will seem to be quite pure.

The lesson from this is to keep sensitive materials where gas is not burned, where they are out of reach of the fumes which emanate from certain of the dark-room chemicals, and not to put them on a high shelf. There are plenty of places in every house where they can be stored so as to keep almost indefinitely. A drawer in a passage or bedroom does as well as anywhere: while the dark room is about the worst place of all.

While the fog which is caused by sulphuretted hydrogen may be visible before the plate is developed, there are certain other agents which will fog a plate in an equally subtle manner, but which do not manifest their results until the plate is developed.

There are certain common substances which give off emanations which have this injurious effect; among these may be mentioned brown or other common impure paper, cardboard, printing ink, turpentine, aluminum, and zinc.

The writer can speak from experience, as he has lost the fruits of a photographic holiday abroad from no other cause than repacking the plates in common brown paper before putting them into the boxes. The paper, of course, was not in contact with the actual film itself; the plates were put face to face with nothing in between them; but whatever it was which the brown paper gave off, it worked its way inward from the edges, and for a width of nearly an inch all round the plates were ruined.

Another curious action is seen in the case of zinc, a metal which is sometimes used by the amateur who constructs his own apparatus. Normally the surface of the zinc is grayed over by a protective film of oxide, and it does no harm; but if by chance this film gets scratched, then the bright metal of the scratches is quite capable of fogging a plate near it. Contact is unnecessary. If a sheet of zinc is scratched and supported for a few hours close to the surface of a plate, but not touching it, and the plate is then developed, it will be found to bear a record of the scratches in the form of streaks of fog.

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LEAVES FROM MY NOTE BOOK

By an Old Hand

REDUCTION

AFTER dealing with intensification, last month, it is but natural that one should think of the opposite process, reduction. Probably Farmer's reducer, or hypo and ferricyanide, is that most generally used, but it is the least satisfactory, as it has to be made fresh each time and frequently causes stains. On the other hand, the ease with which it can be made is a recommendation. All that is required is some clean hypo solution, preferably not acid, and some saturated solution of ferricyanide of potassium. This last can be readily made by adding some of the salt to boiling water, but the solution does not keep well, even in the dark.

If the negative has been dried, it is as well to soak it in water till the film is thoroughly wet, then to drain for a minute or two and flood with the reducer, which should be mixed just before use. The exact strength is dependent on the amount of reduction desired; as a rule, the addition of about 20 drops of the saturated solution of the ferricyanide to an ounce of the hypo will be enough, and it is as well to begin with a weak solution and if necessary add more ferricyanide if the reduction is too slow.

The solution should be a lemon-yellow color, and if it darkens it should be thrown away and fresh applied. In this way stains will be avoided. Reduction must not be carried too far, not as far as it is actually desired, as the process continues during the subsequent washing. It is as well to rinse the negative when the operation is complete and refix in an acid fixing-bath and *then* well wash.

My favorite reducer for general work is Belitzski's, which is always ready for use, keeps well in the dark, and can be repeatedly used. It is made as follows:

Neutral potass. oxalate	65 gm.
Hot water	250 c.c.
Dissolve and add	
Ferric chloride cryst.	34 gm.
Water	100 c.c.
Then add	
Sodium sulphite anhyd.	100 gm.
Water	350 c.c.

The solution should be of a rich, blood-red color. Add

Oxalic acid cryst.	25 gm.

and shake until the solution turns a bright green, without a trace of yellow, then pour off from any undissolved acid and add

Hypo	250 gm.
Water to	1000 c.c.

Keep in the dark-room, not in white light. This acts like Farmer's reducer and therefore one must be careful not to allow the action to go too far.

It is obvious that as both these reducers contain hypo it is not necessary that the negative should be absolutely free from hypo; but if it is desired to reduce a freshly fixed negative it should be at least washed for a few minutes.

Both these reducers attack the shadows more than the high-lights and they are useful for clearing up a foggy negative. On the other hand, it may happen that one wants to reduce the high-lights of a negative in preference to the shadows, and in such a case there are two methods which may be adopted.

The first is to apply to the well-washed negative a 5 per cent. solution of ammonium persulphate, freshly prepared solution. This attacks the high-lights more than the shadows and the action is fairly rapid. When the desired effect is produced the plate should be rapidly washed.

The alternative method is somewhat more troublesome but equally efficacious, and the following solution is applied to the negative:

Potassium bichromate	20 gm.
Hydrochloric acid	5 c.c.
Water	1000 c.c.

In this the negative rapidly bleaches and the action should be allowed to continue till the image appears a pale yellow when examined from the back. It must be then well washed till all trace of yellow stain has disappeared from the gelatin, or a 5 per cent. solution of potassium metabisulphite may be used as a decolorizer and the plate washed.

The bleached plate should then be exposed to daylight for a short time, just a few minutes, and redeveloped with any weak developer, without bromide. Development should be carried on till the shadows and half-tones are fully developed through to the back of the plate, while the high-lights there show some white silver chloride. The plate should then be refixed and washed.

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ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Monochromatic Photograph of Jupiter and Saturn

Professor R. W. Wood has obtained some very interesting photographs of Jupiter and Saturn by means of various filters. One filter was the vapor of bromine, which passed all the ultraviolet from wave-length 3500. Another filter passed the violet from 4000 to 4500; another passed the infrared beyond 7000, and a yellow filter all beyond 5000. Illustrations are given of both planets, and the differences in the markings are very striking. Further work on Mars, on the occasion of its next near approach to the earth, is projected.—*Astrophysical Journal*, 1916, p. 311.

A Note on Spectrography

M. Luckiesh suggests the exposing of a plate in a spectrograph, developing, fixing, and washing the same, and, after drying, replacing in the plate-holder and taking another negative through the first. The effect is to even up the action of light in the second negative, and is comparable to the employment of an ideal photographic emulsion of uniform sensitiveness and of an illuminant emitting equal amounts of energy of all wave-lengths.—*Astrophysical Journal*, 1916, p. 302.

A New Development Paper

C. M. Thomas recently demonstrated before the Camera Club a new printing paper. The report is somewhat vague and indefinite. Dissolve 3 grains of any soft gelatin in warm water, 1 ounce; add saturated solution of citric acid, 12 drops, and boil; now add saturated solution of ammonia-copper chromate, 4 drops, and boil; add saturated solution of ammonia-silver chromate, 20 drops. Coat by brushing any well-sized paper. Dry and print for a just visible image by daylight, as in the case of platinotype. The developer is saturated solution of sodium sulphite, ½ ounce; water, ½ ounce; ammonia, nitrate of silver (10 per cent.), 2 drops; office gum arabic solution, 1 dram; hydroquinone solution, 3 to 6 drops.

The hydroquinone solution is prepared thus: Water, 1 ounce; potass. metabisulphite, 15 grains; hydroquinone, 30 grains.

The ammonia-silver chromate solution is made as follows: To a solution of silver nitrate add a solution of soda or potass. chromate, precipitating silver chromate; filter, dissolve to saturation in equal parts of water and strong ammonia.

The ammonia-copper chromate solution is made as follows: Dissolve 1 part of chromic acid in three parts of water; saturate with copper carbonate; decant off the clear portion, and add strong ammonia only just enough to turn the yellow solution green.

The ammonia-silver nitrate solution is made by adding to a 10 per cent. solution of silver nitrate strong ammonia till the brown precipitate first formed is just redissolved.

Development may take anything from five minutes to half an hour. The resulting prints are of a warm-black color. No hypo is used.—*Journal of Photographic Society of India.*

Although it is stated that no hypo is used it is not clear that the sensitive salts not affected by light are removed. Silver chromate is insoluble in water and while it may be argued that the ammoniacal compound is used yet on drying in all probability the ammonia would evaporate and leave the insoluble silver chromate. The whole process is so indefinite in its instructions that but little comment can be made.

A Test for Silver Chloride

Valenta states that if silver chloride is treated with solution of potassium ferrocyanide, white insoluble silver ferrocyanide is formed. Silver bromide and iodide do not give this reaction. The presence of the ferrocyanide can be easily shown, after thorough washing to remove all soluble ferrocyanide, by treatment with nitric acid, which forms the orange-red ferricyanide. A more delicate test is to treat with a mixture of ferric chloride and potassium bromide, or with uranium nitrate and potassium bromide, when by double decomposition silver bromide is formed with Prussian blue or uranium ferrocyanide. The test is easily applied to any light-sensitive film. It is necessary to ensure the absence of soluble silver salts by preliminary washing and to work in weak daylight if the nitric acid test is employed, or in artificial light if the other tests are used, since the partial decomposition of silver bromide in daylight causes the formation of small amounts of silver ferrocyanide in the treatment with potassium ferrocyanide and subsequent washing. The reaction can also be used to detect chloride in a mixture of halides, the mixed silver salts being first precipitated.—*Chem. Zeit.*, 1916, p. 398.

Test for Hypo

The last drainings of wash-water from plates or prints should be allowed to drip into water to which just sufficient of the following solution has been added to give it a faint pink tinge.

Potassium permanganate . .	5 grains
Caustic soda	20 grains
Distilled water	5 ounces

If the color is changed or discharged the hypo has not all been washed out.

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Photographers' Association of New England, Eighteenth Annual Convention, Copley Hall, Boston, September 12, 13, 14, 1916

The Prize List, 1916

Grand portrait class open to the world. One picture only, 8 x 10 inches or larger. Prize, solid gold medal. No entry fee.

For Members of the P. A. of N. E. only: The Champlain Trophy Cup. Of steriing silver, gold lined, 10 inches high. Presented by Mr. Orrin Champlain, President for 1916, for three portraits made on 8 x 10 plates, or smaller, and the paper on which they are printed not to exceed 11 x 14 inches in size. The object of this award is to introduce a line of photographic work which will bring out the ability of the photographer and the approval of his patrons. Therefore those exhibiting three different subjects, *i. e.*, a child, a woman, and a man, will receive the greater consideration when being judged.

It would also appear desirable to make these pictures in three different styles of printing, and the special points to be considered, are: (1) originality of posing and lighting of the subjects; (2) attractiveness in style of finish, and general pleasing qualities to make a very saleable picture (all without frames).

States' Class: Portraits only, three pictures, any size. First and second prizes for each State division of silver and bronze medals. Maritime Provinces, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Competitors are eligible only in the State class wherein they are members. No picture can be entered in more than one competitive class in any of the above.

Landscape Class: Three pictures, any size. Prize, a silver medal.

Commercial Photography Class: Three pictures any size. Prize, a silver medal.

Space will be reserved for complimentary exhibits for all who do not care to enter in the competition for prizes.

All exhibits must be in the hands of the committee on or before September 8, and all charges must be prepaid to insure acceptance. Address, P. A. of N. E., Copley Hall, Boston, Massachusetts.

No exhibitor's name shall appear on the pictures; each exhibit will be numbered. Names will appear after the awards have been made.

The Association will not be responsible for any loss or damage to pictures in their charge, but special precautions will be taken by the committee to insure the safe return of all exhibits entrusted to its care.

Have screw-eyes with frames, and wire for hanging. Screw on your box-covers, *do not nail them;* and have return address on other side of cover, to insure prompt and safe return delivery.

To Enlarge Kodak Plant

The Eastman Kodak Company has purchased eighty-five acres of land adjoining its plant, fronting on the Ridge road, for $107,000. The company's property now extends from the high bank of the river to the westward for about one and one-half miles.

Arrangements have been made to connect all the plants at Kodak Park with subways, which will carry a double track railroad and a roadway, so that every part of the plant can be reached without going on the public highway. Another purchase of land was made to fill out the frontage in Lake avenue. The plant now covers more than a square mile of land.

Death of Dr. S. Thompson

It is with regret that we announce the death, on June 12, of Dr. Sylvanus Thompson, for many years professor of physics in the City and Guilds Technical College in London, at the age of sixty-five years.

He was an author of considerable fame, especially connected with his name being the translation of Lummer's treatise on photographic lenses. As a lecturer he was preëminent in presenting his subject in a very clear and popular manner without at the same time sacrificing any scientific accuracy.

$\frac{1}{30000}$ of a Click—Taking a Motion Picture of a Camera Shutter

A high, shrill note tells one that something is moving at terrific speed. You see a blur of silver metal, as a disk spins round on a vertical stem, while the edge of it flashes like jewels

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in bright light, much as a silver tambourine would look with an edge studded in diamonds and spun from the centre on a silver finger.

Off on one side you hear the hiss of an electric arc, and your eye catches a tiny light ray that impinges on the glittering edge, and at still another angle is a long horizontal barrel, seemingly aimed at the rotating disk and its far end merged into a box. Fastened to the box is a handle which the operator is turning. Suddenly he reaches forward to the middle of the barrel—you hear a "click" and it is all over. A hundred pictures of a kodak shutter have been taken—a moving picture reel, each view showing a distinct location of the shutter at intervals of $\frac{1}{1000}$ of a second, each picture made by an exposure of $\frac{1}{3000}$ of a second.

Most of us measure our duties in days, weeks, and months. We are content to accept a second as a small, indefinite period of time somehow associated with a clock-tick. Once in a while we read of races where contestants are timed in fifths of seconds, but only with the aid of very accurate stop-watches. Or again, those of us who have kodaks know that there is a snapshot exposure of $\frac{1}{100}$ of a second; but we have no conception of it, nor can we have, because our senses fail to accurately record such an interval. Carry this $\frac{1}{100}$ second ten times further, then carry it thirty times further still, and the senses fail to grasp it, just as they fail to conceive long distances in astronomy.

But in the Kodak Research Laboratory limitations of the senses offer no drawback, nor is a second a short-time interval. It is time enough to take 1000 photographs, and it is thirty thousand times as long as one single exposure interval.

Those of us who handle kodaks think of a shutter click as the last word in speed; and it is very quick. But they have an apparatus in this laboratory that catches the moving shutter standing still, just as you would "snap" a slow-moving object, and it not only catches the shutter in one position but in hundreds of positions, each one $\frac{1}{1000}$ of a second apart.

But you may say: Why bother with photographing a camera shutter? The answer is not only plain but very practical and very valuable to future photography: It is to improve the efficiency of the shutter; to study its rate of opening and closing and from this study to improve its design and optical efficiency if possible.

You can't go out in the market and buy a machine to photograph shutter movements. It had to be conceived, designed, and, to a great extent, built right in the Kodak Laboratory; a task in itself and one that had to be completed before a single test could be made or a single finding announced. You can well imagine that considerable ingenuity was necessary in perfecting it.

The leaves of a camera shutter move very rapidly, so that to get pictures of their instantaneous positions some means of getting 1000 exposures a second had to be devised, as well as a means of rendering exposures of even smaller duration; in fact, not *more* than $\frac{1}{30000}$ of a second.

This rapid succession of pictures, each taken in this inconceivably small time, is obtained in this way: An aluminum disk is mounted on a vertical shaft driven at fifty revolutions per second, constant speed, by a specially governed electric motor. Around the edge of the disk are twenty small mirrors. Since there are twenty mirrors and they move fifty times around in a second, there are 1000 reflecting planes per second, which will fall in the path of a horizontal light ray supplied by a small electric arc. The reflected ray is sent through a horizontal tube or barrel in which rests the shutter to be tested. Behind it is placed a lens which focuses on a motion picture film carried on a horizontal reel, enclosed in the box and turned by a handle. So that as the successive light rays pass through the shutter its instantaneous image is photographed on the film, which, being in motion, advances in time to receive the next exposure further along its length. So that during one click of the shutter we get a succession of exposures.

To the onlooker the test is largely occupied by getting ready. The film is placed on its reel, put into the box, and the shutter to be tested is put into place. The mirror disk is started and builds up in speed until its low hum becomes a shrill squeal. The arc light is struck and adjusted. Then the operator turns the film handle and "click" goes the shutter and it is all finished.

With the perfection of this instrument a new avenue of photographic precision is made possible. From now on it will be possible to study shutters not as to speed only, but as to the quantity of light that passes through for any aperture and any time. A shutter designed to open in the shortest possible time and to close in the shortest possible time is the efficient one and science is nearer to approaching this perfection than ever with the aid of this apparatus.

All of the many types of kodak shutters are undergoing this investigation, with the sole idea of improving the product by advancing the science, which latter is just what the Kodak Research Laboratory stands for.

A New Convenience on the Camera

The convenience of the camera has been further increased by the addition of a means for accurately judging the actinic value of the light at the time of making a picture and thereby arriving at the correct length of exposure to be given the sensitive film. The improvement relates particularly to those cameras which carry a roll film. As these films are now made they are backed with a sheet of black or red paper for the purpose of protecting them from the light, and they have imprinted upon them numbers which appear under a tiny opening in the back of the camera and serve as a guide to the operator in properly spacing the exposures on the film. The new scheme, in addition, contemplates attaching to the backing paper pieces of sensitized paper at regular intervals. These pass along under another opening, and by observing the change which takes place in the color of these pieces as they are exposed under the open-

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ing the operator is enabled to arrive at the length of time the shutter is to be opened in making the exposure for the desired picture.—*Scientific American.*

The New Ansco Catalogue

The new 1916 catalogue just issued by the Ansco Company is handsome in addition to being most interesting, covering as it does some fifty-eight different styles and models, Speedex film and film packs, Cyko paper, and Ansco chemicals. Some new camera models have been added to the line; namely, the Ansco V-P No. 0 in two styles. The former, possessing many novelties of structure, fall in line between the Folding Buster Brown and the Folding Ansco series. The Junior cameras are all equipped with the new Ansco self-leveling view-finder. The Ansco V-P No. 0, with focusing jacket, has the distinction of being the only camera of its size in the world which has a device for focusing, thus enabling the user to take full advantage of its high-grade anastigmat lens. Other new Ansco products described in this new catalogue are the Ansco Film Pack Adapter and Enlarging Cyko Contrast Paper, supplementing the already popular regular Enlarging Cyko. Full description and price information are given, chapters are devoted to Ansco lenses, shutter equipment, and the exclusive structural features of the Ansco cameras. A copy will be supplied to anyone interested. Address, Ansco Company, Binghamton, New York.

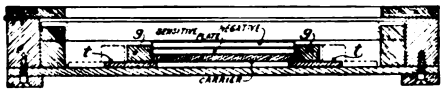
Enlarging Pictures Without a Lens
A Radically New Departure in Photography

The idea of enlarging photographs without the aid of a lens is not wholly new. By treating the film of a negative with certain solutions it is possible to cause it to become detached from its backing and to swell. In this way a certain degree of enlargement can be secured at the risk of injuring the film and without guarantee of freedom from distortion. It is, of course, also possible to make enlargements by using a pin-hole in place of a lens, but the results obtainable by this method are necessarily very imperfect.

These are the ordinary expedients which may have suggested themselves to the reader on glancing at the title of this article. But that it should be possible to prepare an enlargement by direct contact printing, yet without in any way "stretching" the film, comes as a startling surprise; sounds, in fact, almost incredible.

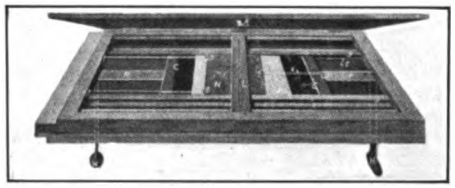
Yet such is the process demonstrated by Dr. A. J. Lotka at a recent meeting of the American Physical Society and described in the current issue of its official origin, the *Physical Review.*

Briefly stated, the new method consists in exposing a sensitive plate behind the negative, in direct contact with it just as in the ordinary operation of copying a negative in a printing frame, but employing a narrow slit-source of light which illuminates only a narrow strip of the negative at a time. Moreover, as the exposure proceeds, the negative is moved past the slit so as to expose in turn every portion of the picture. At the same time the sensitive plate or film is also moved past the slit with a velocity equal to some constant multiple n of the speed of the negative. After development, fixing and washing in the usual way there is thus obtained a distorted copy of the original negative, the distortion not being, however, accidental and uncontrolled, but perfectly definite and in accordance with a fixed law; all lines parallel to the length of the slit are unchanged, while all lines at right angles to the slit are drawn out in the



Cross-section of the enlarging apparatus

ratio of $n : 1$, as compared with the original. This distorted copy is then subjected to a second operation similar to that practised upon the original negative, except that now the motion is at right angles to the lines drawn out in the first operation. The product of this second step is a negative geometrically similar to the original, but on a scale n times that of the original, in



lineal measure, or in other words, it is an enlargement of n^2 times the size of the original. Thus, for example, if $n = 2$, the product is an enlargement four times as large as the original.¶

It may appear at first sight as a disadvantage of the new process that it requires two successive operations. But upon reflection it will be seen that two such operations are necessary in any case if a *negative* copy of a negative is to be prepared. Once such an enlarged negative has been prepared any number of copies can then be made by any of the customary copying processes.

Our illustrations show an example of the work of the new process, and also an apparatus which can be used to carry out the process. This apparatus consists of a simple box containing a track t, over which a carrier, C, is adapted to slide. Attached at a to the right-hand end of the carrier C is a silk cord, s, which passes thence through an eye, e, and back to a pin, p, where it is fastened to the end block of the box. Two further silk cords are somewhat similarly disposed at the left-hand end of the apparatus. The eyes e may be attached (for example with gummed tape) to the glass back of the negative N, or, if a celluloid film be employed, to a separate glass plate to which the film is temporarily fastened with gummed tape.

It will be seen that the arrangement of the cords s and eyes e, described above, insures that however the negative N be moved to the right

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or left, the carrier *C*, and with it the sensitive plate *P*, always moves in the same direction as the negative *N*, but with twice its speed. Over the negative is placed the narrow slit *L*, and during exposure the lid of the box, thrown open in the illustration to show the underlying structures, is of course closed. A slot, *K*, is so situated in the lid that, when the lid is closed, light from a suitable source placed vertically above the slit can gain access through it and through the negative to the sensitive plate beneath. The motion of the carrier and with it of the plate and negative is effected by drawing out the ribbon *r* by the aid of the handle *H*. At the farther end of the apparatus a similar ribbon, *R*, may be provided, terminating in a weight, *W*, or other suitable tensioning device. The guides *g*, *g*, for the sides of the plate *P*, and negative, *N*, are adjustable laterally so that they can accommodate plates of different sizes, and in particular the original negative, during the first stage of the process, and the distorted positive during the second stage. A corresponding change in the dimensions of the recess in the carrier, to receive the plate of the required size, can be made by means of a kit or in any other suitable manner. The process and apparatus are protected by a recent patent.

Safety Container for Blue-print Paper

Those office persons who are compelled to handle blue-print paper and tracing paper will be glad to know of a new device in the shape of a wall container which will greatly simplify the matter of handling the paper; and the person compelled to buy such paper will be interested to know that much of the material heretofore wasted by improper and careless handling will be saved. The case is hung on the wall, where it is always accessible. It is made of heavy metal of lengths corresponding to the standard widths of these papers. The fresh roll is put in place by pushing aside a slide, which is replaced after the paper is in place. The paper is now protected from the light and moisture of the air until the roll is entirely consumed. When it is desired to make use of a piece of the paper, a measuring tape mounted upon the case is drawn out the required distance and the paper comes with it. The paper is then torn off by means of a straightedge which forms part of the holder. —*Scientific American.*

Photographers Are Busy

Photographers are making an appeal to the departing National Guardsmen to have their pictures taken, and photographs of many well-known men in uniform are seen in the show cases. One of the Fifth Avenue shops shows photographs of Lieut. Col. Vanderbilt, Adjt. Gen. Stotesbury, Colonel Sternberger, and other staff officers, with Colonel Lucas of the Twenty-second Engineers, Colonel Austin of the Eighth Artillery, Colonel Fish of the Seventh, and Colonel Bates of the Seventy-first, in full-dress uniform.

They are not new pictures, but were taken a year ago. The photograph galleries are as up-to-date in their exhibits as the department stores, which are showing stretchers in their windows, and the boys' clothing shops, which exhibit miniature military and naval uniforms.

One of the inexpensive photograph galleries, which has a number of branches, is offering to throw in one picture and have it colored for any man who will give an order for pictures at the regular prices. At the gallery where the staff officers' pictures are shown a dozen or more of the guardsmen have been photographed since June 21. Some of the photograph-finished-while-you-wait places along Broadway have gathered in a few soldier customers, but the greater number are to trust to amateurs, and will send their pictures home after they get South.

Carl Ernst & Co. Change Address

The well-known and long-established house of Messrs. Carl Ernst & Co. has recently moved to 258 Broadway, New York City, where they will continue to manufacture their high-grade line of photographic mountings.

The Camera Club of Detroit

At an election of officers, on June 19, the following were elected: President, Otto H. Linstead; Vice-President, Cecil H. Taylor; Secretary-Treasurer, Philip M. C. Armstrong; Board Members at large, Dr. Oscar E. Fischer and Herman Gabriel.

A program of events has been arranged, including a number of lectures, club outings, and other entertainments. An open competition will be held in the fall, to be announced later.

"The Portrait Studio"

Henry Greenwood & Co., London, England.
Paper, 15 cents net

This little volume, the author tells us, is the outcome of many questions on the selection and erection of studios which have come before the writer through his association with the *British Journal of Photography*. Much of the advice here given has thus been prompted by problems and difficulties presented to individual photographers. Much of it has been the subject of articles in the *British Journal* from time to time, but it is hoped that the present hand-book will be found to collect just such practical information as those engaged in photographic portraiture, or proposing to take it up, require to have at hand for their guidance.

A New Developer

The reliable house of Burke & James, Inc., Chicago, Ill., have just placed on the market a new developer, which it is claimed will produce results equal to those produced with metol; but this developer, monogallic acid, is not to be used as a substitute for metol. It is best suited for the development of papers such as Rexo, Velox, Cyko, etc., and may be used for plates and films also. A trial of this new developer will be well worth while, and further particulars may be had by writing to the manufacturers.

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A New Style Sliding Mount for Lens

Owing to the popular demand for an inexpensive pictorial lens, especially adapted for use in the various models of Graflex and Reflex cameras, the Struss Pictorial Lens is now being made in a new and improved mount, which permits of the lens being used in two different positions, set in or out. It closes up in the camera when set in, and may be used in that position when there is a sufficient bellows extension, and it may be used set-out when additional distance from the plate is required on account of the relative shortness of the bellows when photographing very nearby objects.

In the 9-inch focal length the lens is set in 1½ inches from the front board, requiring a minimum bellows of 10½ inches, and in the 12-inch focal length the lens is set in 1½ inches, requiring in this position a minimum bellows of 13½ inches. With a maximum bellows of 10½ inches the 9-inch lens should be used in the forward position, and with a maximum bellows of 13½ inches the 12-inch lens should be used in the forward position. When not in use the lens may be set in and closed up in the camera.



With a relatively short bellows an extension tube may be fitted so as to give the required length.

In the 2-inch diameter, tubes 7-inch and 8-inch focal length may be fitted to order, lens speeds being respectively F 4.3 and F 5. These focal lengths will at full aperture work with more diffusion than the regular 9-inch focus lens at F 5.5, but at times this is a very desirable quality, and more definition may be easily secured by stopping down till the proper quality is secured.

For further particulars write Karl Struss, 5 West 31st Street, New York City.

News Pictures

Do professional photographers take full advantage of the ever-widening market for news photographs? At the present time there is a large number of press photographers whose sole duty is to supply newspapers or agencies with pictures of daily events. These men are sent to all parts of the world; they have to be on the spot wherever anything unusual is taking place. But it is obviously impossible for the press photographers to be at the thousands of places where unforeseen things happen every day. These men cannot be kept hanging around provincial towns waiting for something to turn up. The local professional is on the spot; he can secure photographs before the press photographers have received instructions to start for the district. Does the professional watch for opportunities? In some districts he does, and by making the most of his chances is able considerably to increase his income. The man who has as much as he can do with studio portraiture does not need to trouble about this kind of business. But how many are there who cannot find time for a little outdoor work?

The first question that arises naturally is, does it pay? That depends entirely upon the way the photographer takes it in hand. It can be made to pay, and pay well, if a scheme is drawn up for working according to the peculiarities of the district. Take the case of a photographer in a seaside town. There are several markets open to him. The big daily papers are always ready to receive pictures of such subjects as stormy seas, launching the lifeboat, big hauls of fish, coast erosion, and stranded vessels. The local papers, in addition to being interested in the same subjects as the big dailies, will also consider matters of purely local interest, such as the fire brigade at work, the mayor opening a bazaar or laying a foundation stone, the visit of some notable person to the town, in fact, anything of interest to the district. Then there are the weekly papers and monthly magazines, all wanting photographs. Photographers in country towns have innumerable opportunities for getting pictures that deal with every form and aspect of country life, activity, and sports. The cultivation of fruit and the breeding and care of dogs, fowls, cattle, and horses are all subjects for salable photographs if they are made interesting and offered at the right time and place. Pictures that are purely topical, such as a motor accident, a railway collision, or a big fire, should be sent off to the papers as quickly as possible. When a photograph has been taken too late in the day to get it finished and sent off early in the evening, the best plan is to pack up the exposed plate or film, send it off by passenger train, and wire to the newspaper office asking them to pick up the parcel at the station.—*Professional Photographer.*

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THE WORKROOM

By the Head Operator



TITLING AND LETTERING NEGATIVES
THE MAKING OF COPIES TO EXACT SIZE
PRINTING HELPS WORTH WHILE
TACT
HINTS FOR THE DARK-ROOM
EXPOSURE TABLES
REMOVING PYRO STAINS
OUT-DOOR GROUPS
KEEPING SOLUTIONS
HOW I USE PYRO
FILM STOCK TROUBLES IN THE TROPICS
GREASE ON NEGATIVES
HYPO-ALUM TONING
"GASLIGHT" VS. BROMIDE
TRANSFEROTYPE PAPER FOR DUPLICATING A NEGATIVE
PHOTOGRAPHING ANIMALS
VERY RAPID PLATES
EFFECT OF HUMIDITY ON PHOTOGRAPHIC FILMS
PROTECTING NEGATIVES

TITLING AND LETTERING NEGATIVES

THE proper and neat titling of negatives is quite a need in these days of high-grade commercial photography.

Titles should be neat and easily readable to look well and to make an impression among business people. How often have you seen an otherwise good print practically ruined in appearance by a ragged and difficult to read number of title.

Many commercial photographers pay practically no attention to this feature of their work, leaving it to a boy or girl or some other inexperienced person, when it really deserves the attention of a first-class workman.

Lettering may be placed on a negative to show either black or white on the finished print.

BLACK LETTERING ON A WHITE GROUND

To show black lettering on a print with a blocked or white ground the lettering may be scratched in reverse through the opaque of the blocking by means of an engraver's needle. (These engravers' needles may be purchased in various sizes from any dealer in artists' materials.) If any trouble is experienced in piercing the opaque and a double-coated plate, the following may be used instead:

Take a small drill, a sixteenth of an inch or thereabouts, file it off, drive it into a piece of hardwood, preferably, and then grind the other end to a fine point, when it will be ready for use. By heating this point with an alcohol lamp or other means it will be found to go through the opaque and film easily, making a neat job. These drills do not seem to lose their temper by the heating. Engravers' needles are spoiled by heating.

Probably the best way of inserting titles with black lettering on a negative is to photograph the title, using a stripping plate, and developing with a contrasty developer. When dry, strip off and insert in place on the negative. This gives a very neat result.

Another method, especially desirable for use by portrait photographers who want their name on the tinted border of a portrait, is to have a sheet of the name printed by a type printer. Turn this over to a photo-engraver, or anyone using wet-collodion plates, and have them make a couple of plates to be stripped off, the stripped film to be used. This gives an absolutely clear line with an opaque background, wears well, and may be used over and over again.

Still another method is as follows:

Have the lettering typewritten on a piece of artist's tracing paper, or any thin tissue which has little or no grain in it. The paper should be backed by a sheet of carbon paper in such a manner that a carbon impression will be made on the reverse side of the paper from that bearing the inked impression when the typewriting is done. This will produce a fairly opaque lettering.

A paper negative should then be made of this sheet of titling on some thin, contrasty, developing paper. When the print is dry and flat, rub castor oil on it to make it transparent, when it may then be trimmed to shape and placed on the negative in the proper position. With a white-ground negative, some of the film will have to be removed from the plate to make room for the strip bearing the lettering. On a black-ground negative, it may be placed on the negative itself.

WHITE LETTERING ON A BLACK OR NEUTRAL GROUND

White letters on a black or neutral ground may be easily obtained by the use of a lettering pen and water-proof India ink and lettering on film support. This film support may be purchased from any photo supply house. It is best to have the film support of a size sufficient to cover the entire plate with which it is to be used as there is a slight yellowness to the film support. Rule guide lines on a piece of paper the exact size of the desired lettering. Place the film support over these guide lines and letter on the film support. When lettering is done and ink is dry, turn the film support over and bind in contact with the negative.

The ink may be removed from the film support by the use of alcohol, and the film support relettered and used again on other negatives.

—*L. G. Rose.*

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The Making of Copies to Exact Size

In these days of the many uses of photography the photographer, especially the one doing commercial work, is often called upon to make copies to exact size—not approximately, but exact. Architects and topographers are those who make the most frequent demand for such work, although it is very useful in making copies of handwriting and any legal work where a great deal depends upon accuracy. It may also be used in making copies of long tracings or prints of any sort where sections have to be matched correctly.

By laying off four points on the copy equally distant from each other, and bringing those points to points equally distant on the ground-glass, the exact size desired may be obtained. If a double enlargement is desired, the copy is laid off with the lines, for instance, 12 inches apart, and the lines on the ground-glass are made 24 inches apart, the 12-inch lines then being brought to the 24-inch lines on the ground-glass. A one-half reduction is just the reverse, etc.



FIG. 1

The method of proceeding is as follows:

The first requisite is a beam compass of reliable make—one that is shaky or loose in any way being worse than useless. Take the copy (for instance, a map), and lay off a convenient distance thereon, say, *A–B*. (see Fig. 1). This distance should be such that in erasing the pencil marks from the copy when the work is completed none of the copy itself will be injured. The compass is then set tight for such distance and the point *A–C* is put in, being careful to get it fairly square with *A–B*. With one point of the compass at line *B*, describe an arc going through point *D*, after which, with the point of the compass at line *C*, describe an arc going through point *D*. This will give the fourth point *D* accurately.

For copying to exact size the above procedure is repeated on the ground-glass; that is, bring the image of the laid-off points to the compass distance.

The pencil used in laying off the points should be very hard and have a fine point, and all work should be very carefully done, as success depends upon accuracy in laying off the copy.

The camera and copy-board for this work will have to be exactly parallel. There are several methods of getting the camera and board parallel, probably the most common one being by the use of a small pocket compass enclosed in a case having one straight side. This straight side is placed in contact with the copy-board, and after noting the position of the needle, the compass is placed in contact with the ground-glass and the ground-glass brought to such a position that the needle of the compass is in the same position as when in contact with the copy-board.

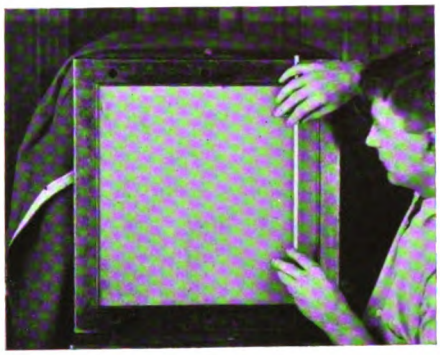


FIG 2

For a vertical test a common carpenter's plumb-bob will be all that is necessary.

In measuring the points on the ground-glass it will be a little difficult at first, as the points on the beam compass slide all around on the glass, but with a little practice it will become comparatively easy. (See Fig. 2.)

Also, considerable difficulty may be experienced at first in getting the image on the ground-glass the same size all around as the copy, but as every photographer is more or less familiar with the working of his lens it is not deemed necessary to touch on that point herein.

In putting the plate in the holder, care should be taken that it is in there in the right position also that the holder is in proper contact with the camera, as all these things count when one is working to a hundredth of an inch or so.

After the plate has been exposed and developed it may be again measured. While taking this measurement the operator should avoid puncturing the film on the plate.

After the first plate is made, of course, it is not necessary to measure those succeeding where they are to be copies to the same size, although they should be checked up frequently, as temperature and humidity have considerable effect on apparatus.

In making prints from the negatives the prints cannot be dried on frames or drying apparatus of any kind, as they would retain the stretch which all prints undergo in developing and washing, and this stretch is considerable. The proper method of drying the prints is to hang them on a line separately and allow them to become bone dry, when they will return to their proper size. In mounting such prints, the only way open is to dry-mount them, using mounting tissue.—*L. G. Rose.*

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Printing Helps Worth While

In making negatives for commercial purposes, especially for catalogue work, oftentimes in securing a lighting that shows the goods up properly one gets shadows that are a little too deep. Especially is this true in making photographs of sets of dishes, furniture, such as filing-cases and phonographs, and in color-correction work.

When it comes to setting up a negative of the above nature for a long run of prints it is very necessary that the negative be evened up in such a manner that the printer will not have to do any manipulating during the printing operation.

The method that is used in the better class of commercial shops now is to color the shadows with aniline dyes; the deeper the shadow the deeper the color of the dye used, and *vice versa.* But as aniline dyes have become scarce, due to conditions caused by the war, ordinary household dyes, such as can be purchased at the neighboring drug-store, will answer quite as well, with the exception that the latter dyes cannot be washed off after once applied, as they are fast colors, whereas the aniline dyes can be removed by soaking in water.

The dyes are applied to the negatives in the following manner:

The colors of the household dyes mostly used are turkey red and orange, and they should be mixed up in fairly strong stock solutions. Thev can then be diluted down to the proper strength when it is desired to use same.

The dyes may be applied to the negative with a brush, being careful to get it on even, and after each portion has been gone over a blotter should be applied immediately to take up superfluous color. It is better to make several applications of a weak color than one of a strong color.

The red dye should be used for extreme shadows, and the orange and yellow for lighter shadows.

It is remarkable what a help this is to many negatives, as the dyes hold back the weaker portions of the negative, and improve many that could not be improved upon in any other manner without a great deal of manipulating.

There is another class of negatives that commercial photographers often have that are troublesome to print, and these are negatives of windows made at night and interiors of houses and shops. They often have broad, heavy shadows close to strong lights, or weak places that are hard to print up evenly.

The following can be used to good advantage in helping just this kind of negatives.

For example, build up an 8 x 10 printing frame about three or four inches (just as is done in making a vignette, only building it up a little farther). Stretch a piece of vignetting tissue over this frame, insert the negative, and, by holding it up to the light, so as to bring out the thin portions of the negative, apply opaque with a brush to the tissue over those portions. In other words, just dab it on over the thin portions, not completely covering them, but just enough to obstruct the light and soften it down. Considerable light can thus be eliminated, and it slows down the thin parts of the negatives, as should be the case.

In printing a negative in this manner the printing frame has to be held square with the light, otherwise the shading would come in places where it is not desired. With a little practice this method is a wonderful help.—*L. G. Rose.*

Tact

Your receptionist shows a lady a number of specimens. The lady takes a fancy to a pleasing portrait of a popular actress, and insists on being photographed in the same pose and with the same lighting. The style of the actress picture is totally unsuited to the lady's figure and features. This is a case where tact is necessary. The receptionist cannot, of course, tell the lady that she is not as beautiful as the actress, and that the style she has selected would be quite out of the question. Probably no two receptionists would act and speak exactly in the same way; but, however they faced the problem, a successful solution could only be arrived at by the exercise of tact. The customer in any case would have to be pleased whether she was induced to change her mind or under the impression that she was having her own way. This is only one problem out of hundreds that the receptionist has to solve. It is not too much to say that there is no trade or profession that calls for the exercise of tact more than photography. Dressmakers, no doubt, have many worries, and their duties call for a lot of patience and tact. Certainly ladies are particular about their dresses; but photographers have to deal not only with the dresses of their customers, but with their personal appearances, their features, their complexions, their hair, and all those things that people generally are most sensitive about.

All the tact in photographers' studios is not required for the reception-room. A great deal is needed in the studio. The operator must know how to deal with the little fads and fancies that nine out of every ten people are afflicted with. A good impression made on the sitter in the studio goes a long way toward getting the proofs of the photographs sympathetically considered. If a sitter goes away with a remark such as: "I feel sure I shall be pleased with the photos, the operator was so careful; he took such pains and he seemed so pleased with the pictures he arranged," there is a much better chance for the photographs. On the other hand, if a customer is heard to remark to her friend: "I'm convinced I won't be pleased with my pictures; I couldn't bear that man; he didn't seem to care whether he got a good picture or not," the proofs arrive already condemned. The full qualification of a good operator does not consist merely in knowing how to take good photographs; it embraces a knowledge of human nature, an easy, natural manner which dispels the nervousness of sitters, and, above all, a tactful disposition.

Tact is required in the office where the correspondence is dealt with; a tactless letter may drive away a profitable customer. If a customer writes to say that she is not pleased with her

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proofs, great care should be taken in drafting the reply. Do not let your letter convey a "take it or leave it" impression. Whether you suggest another sitting or more retouching, do it in such a way that your customer will see that you are just as anxious as she is that the result should be satisfactory.—*Professional Photographer.*

Hints for the Dark-room

Labels. An ordinary gummed label soon comes off in the frequently damp atmosphere of the dark-room. Sized and varnished it will last as long as the bottle, practically. The writer has had such labels in use for years in the acid-laden atmosphere of a chemical laboratory without their showing signs of leaving their supports. Use a thin paper, make the bottle dry, and rub the gummed and moistened label down. Then apply a coating of size (1 part of glue in 10 parts of hot water), and, when quite dry, varnish with an "oak" or "church", *i. e.*, a varnish containing linseed oil. Spirituous varnishes (as used for negatives) do not last so well.

For attaching the labels a mixture of glue and gum is better than gum alone. Here is a good formula which is eadily made up: Soak 1 part of the best glue in water until thoroughly swollen, add a little sugar candy, 1 part of gum arabic, and 6 parts of water. Boil with constant stirring over a spirit lamp until the whole gets thin. The moisture does not keep; coat sheets of paper with it, let dry and cut up into convenient sizes.

Ground-glass Labels. One of the best methods of labelling is to dispense altogether with paper labels, and instead to grind a patch on the bottle with emery powder. The formula can be written on the ground portion with lead pencil. The ground patch is made in a few minutes with a piece of moistened emery cloth, aided by a little emery powder. The writing is removed without any difficulty by rubbing with a piece of hard rubber. It does not wear away or become illegible in use. A coat of varnish can be applied to the patch and the writing thus made quite permanent. But the convenience of the method lies in always having the label at hand (as it were) without having to look around for paper or gum. Large bottles of stock solutions should be labelled in big, bold letters, HYPO, ALUM, etc., in Brunswick black or other good varnish paint. A solution of ordinary sealing wax in methylated spirit is as good as anything. Grind the wax, first alone and afterward with the solvent, before applying.

Cleaning Bottles. I could easily fill pages with directions for cleaning bottles which have contained this or that chemical. But it does not pay to spend time over such business. If water does not clean the bottle right away, try shaking a little hydrochloric acid in it; if this is of no use, shake up (still with the hydrochloric acid) with shot, or small coal, or coarse sand or something which will scrape the impurity off the side. If this fails, cast the bottle aside as useless.

Solutions that do not Keep. The permanence or otherwise of a solution is a matter of conditions—generally whether the air gets access to the liquid or not. Two methods of preserving solutions from the action of the air are worth bearing in mind. The first is to store the solution in a lot of small bottles, say 4-ounce capacity, each filled to the lip and well corked. The second is to store the solution in a bottle with a cork at the bottom such as is described above, and to pour a layer of "heavy" paraffin oil on the top of the solution. The oil, although designated heavy, is lighter than water, has no action on any ordinary solution, and effectually excludes the air.

Bottles for Developer. The bottles for one's set of solutions, *e. g.*, pyro, bromide and alkali, may very fitly be selected of distinctly different size and shape, so that they cannot be mistaken in the rosy gloom of the dark-room. As suggested some time ago, the bottle proposed for poisons and in shape like a fashion-plate young lady, *i. e.*, nipped in at the middle, might be adopted for pyro were it not to be feared that by a natural association of ideas the photographer might pass from clasping of the waist to pressing to the lips—with disastrous results.

Accuracy in Weighing. There is such a thing as needless accuracy. It is no good weighing chemicals more accurately than the solutions containing them can be measured. From tests which I got some careful photographic friends to do in conjunction with personal tests some time ago, I found that in broad daylight their measurements of solutions (1 or 2 ounces) varied about 1 per cent. (1 in 100) on either side of the truth, *i. e.*, total error of 2 per cent. Hence, weights can be safely just as inaccurate, but not more so. This means that an "ounce" of, say, potassium bromide may be 4.37 ($\frac{1}{100}$ ounce) more or less than an ounce without "cutting any figure." In other words, it may be 441.8 or 433.1 grains. This means that the trouble of finally adjusting the weight to $\frac{1}{2}$ grain is simply wasted. When small quantities, 20 grains and less, are being weighed the greatest accuracy must be oyserved.

Weighing in Semi-darkness. The glass measure has an aptitude of eluding one's vision in the dark-room. It is forced to reveal itself if we provide it with a coating of white enamel paint on its foot and around its upper outside edge. This is one of those absurdly obvious hints which the erudite miss.

Exposure Tables

This little booklet is completely revised, and contains accurate tables for determining photographic exposure under all conditions and in all latitudes throughout the world. It lists plates now known to be on the American market, and contains, in addition to the tables, a concise and comprehensive treatise on photographic exposure, outdoors and indoors, by day and by night, for still and moving objects, and for copying, reducing, and enlarging. The book is completed by a number of pages designed for exposure records. Published by the American Photographic Publishing Co., Boston. Price, vest pocket size, bound in cloth, 25 cents.

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Removing Pyro Stains

Ilford Ltd., the well-known plate makers, suggest the following treatment for the removal of pyro strains from negatives. Soak the negative in a solution of chrome alum, 1 grain to the ounce, if it has not been dried, then immerse for ten minutes in

Potassium permanganate .	5 gm.
Common salt	12.5 gm.
Glacial acetic acid . . .	50 c.c.
Water	1000 c.c.

After a brief wash, transfer to

Potass. metabisulphite . .	50 gm.
Water	1000 c.c.

till the image is quite white. Then develop with any non-staining developer, such as amidol or hydroquinone. All processes may be carried out in daylight.

The above bleacher followed by the metabisulphite is an excellent remover of pyro stains from the hands.—*British Journal of Photography*, 1916, p. 270.

Out-door Groups

No branch of photographic work gives more pleasure, is harder to do well, and is more renumerative than making groups out of doors. The professional photographer does so little in this line that he does not get the practice which is necessary to perfection. Because he does so little of it he is apt to be impatient when he gets a hard lot of subjects, and, too, because he gets so little practice, his *tact* may not be up to the standard. It is not the operator's fault if he makes a successful group without tact or patience. To have tact and patience means everything.

Patience comes in for a large share of work in bearing the little worries which always come from trying to please everyone, and yourself too.

To combine harmoniously the many different natures which make up a group, without hurting someone's feelings, requires tact. In three minutes one ought to know pretty nearly who wants to sit beside whom. To place persons where they do not want to be, nearly always makes them look gloomy. Keep gloom out of your groups by all means. Don't put very dark persons where they will look darker, or light ones where they look lighter. Arrange what light subjects you may have where they will look the best and help light up the dark spots most.

Contrast gives light to a picture. Above all, do not plant your subjects in stiff rows like a pickle exhibit. Give a rather rough-and-tumble arrangement to your group, without going to extremes, which will give it an air of real comfort and ease and harmony.

In an article I read recently a certain foot-ball writer criticized the seeming lack of oneness and harmony of one of our college teams, when compared with its strongest opponent, and the principal thing he based his criticism on was their team photographs.

They sat in rows, not over close to each other, not as a team ought to be, but each man for himself, while the other team had that rough-and-tumble appearance I mentioned—legs, arms, heads, and bodies all tumbled together like a lot of brothers. This may seem a weak argument to some, but the more groups you make the stronger it will get. The teams themselves undoubtedly had something to do with this criticism, but I hold that with the photographer lay no small amount of the fault.

If, as it is said, great paintings have changed the lives of men, why is it not possible for a group photograph to change the life and work of a college foot-ball team?

Accessories will always present themselves when needed, but should never be used if not in common with the situation. Who would think of going camping with a brocaded plush chair, and yet I saw a camp scene with such a chair in the entrance to the tent. Think of it! when an old soap-box would have been more like camping, and cheaper, too.

It is not always possible to choose the light best suited to group work, but a bright cloudy day is by all odds the best. Between ten and two o'clock the light is strongest, but by increasing the time of exposure I have taken groups as late as five o'clock in December. Sunshiny days are not good, especially where trees are introduced into the composition. The shadows or high lights are very apt to be too strong or blotchy.

It is hard to get a natural expression to the face unless it be in deep shadow. Sun striking across the face also is apt to cause over-contrast in lighting, and squinting of the eyes. Photographers in country towns would add greatly to their income, especially during the summer months, if they would make out-of-door groups one of their specialties. The cost of producing the negativeis much less, and the cost of finishing is a great deal less than in portraiture, no retouching or vignetting being necessary. In the long run nothing in our line pays better. The hard-worked operator in the studio needs a change, a rest from the nervous strain of long-continued indoor work; let him take it making groups out of doors.

Keeping Solutions

The amount of loss from the deterioration of stock solutions must total up to a very considerable figure. Probably it is felt in but few studios, for the constant use of chemicals makes convenient a new mixing every few days. To the amateur, who does but occasional work, the loss is relatively greater, and, though the actual value of the spoiled solutions is not great, their spoiling is very exasperating.

Even in the most carefully-managed of darkrooms, or toning rooms, there is a certain amount of leakage in this direction, and in not a few businesses it pays to prevent more than a minimum. It is not sufficient to cork bottles. Corks do not always fit more than moderately well, and there is always a leakage of air through or around them. Why does the air so insidiously penetrate into places where it is not wanted? Surely there can be no current of air flowing into and out of a bottle. It is largely a question of temperature. During the day the bottles prob-

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ably get warm and the air inside expands, and so forces a part of itself through the cork. When things cool off the air in the bottle contracts, and so more air percolates through the cork, carrying a fresh supply of oxygen to the solution; then as the solution lowers in the bottle from use the air-space in the bottle grows larger and larger, and every time the bottle is opened and poured from a new lot of air is admitted, until, to all practical intents, the bottle might as well be kept uncorked.

Where a stock solution is mixed in quantity sufficient to last for some time the easiest way of keeping it pure is to bottle it in a number of small bottles. Each one may then be sealed and remain secure until it is wanted. Fill the bottle with the solution, cork tightly, and then immerse the cork and bottle-neck in a dish of warm (melted) paraffin wax. This wax may be melted in any small pan or ladle of iron or tin. The wax sets in an air-resisting film, perfectly protecting the contents of the bottle. Paraffin wax is particularly useful, as it not only coats, like common sealing-wax, but it also penetrates into the pores or cracks of the cork, effectually sealing them. It is therefore useful for corks which are not otherwise sealed, as it renders them impervious to air, except when used for varnishes or "dryers," which dissolve the paraffin.

Where large quantities of solution are used a large bottle may be employed instead of a number of small ones. A hole at the side and near the bottom of the bottle allows the solution to be drawn off. This hole should be fitted with a perfectly air-tight cork, through which a glass tube passes, the tube being fitted with an India-rubber extension and a small tap. As the liquid is drawn off through this tube more air enters through the cork in the mouth of the bottle, and this air must have had its oxygen extracted. To rid the air of oxygen take a 6- or 8-ounce bottle, half fill it with broken glass (broken small) and cover the glass with a strong stock solution of pyro-soda. The cork of this bottle is well sealed into the neck, and through it two glass tubes are placed. One reaches down through the broken glass to the bottom of the bottle. This is to admit the air; the other just reaches through the cork, and is attached by a rubber tube to a similar glass tube in the cork of the big bottle. As stock solution is drawn off, its place is automatically taken by air, which has passed through the pyro-soda. In this passage through all the oxygen is eliminated from it.

Some few solutions—the sulphocyanide and ferro- and ferricyanides—do not suffer from oxidization. That arch poison, potassium cyanide, no longer in universal use, should be protected by an air filter of caustic soda instead of the pyro-soda developer.

Many solutions deteriorate under the action of *light*. This is obviated with some by their use in the dark-room only; others, such as the varnishes, are used in daylight. It is well to keep all the bottles in a dark closet. Even with this precaution it is well to protect the bottle from light during use. A bottle of red glass is useful, but equally effective is to paste round the bottle a piece of brown wrapping paper.

How I Use Pyro

It is safe to assume that every manufacturer of dry plates has furnished developing formulæ which will give good results with his plates. A comparison of the formulæ for any one developer for the different kinds of plates will show considerable variation. Thus it follows that a formula suitable for one make of plates ought not to be used for any other.

In spite of an oft-repeated admonition, nearly every one engaged in photographic work uses more than one kind of plates. A cheap single-coated plate does very well for many purposes. A double-coated plate is needed when halation is to be avoided. Films are used when convenience of carriage is most important. When the quality of results is compared with the financial side of the question, it is often found that all desirable features are not combined in the different plates of one make. Consequently, the photographer who uses different plates finds himself face to face with the question of keeping numerous stock solutions or of sacrificing the quality of results to the convenience of an average developer.

For the many who consider pyro a good developer, the following will offer a convenient method for using the variously proportioned formulæ. Sulphite and carbonate of soda are prepared by making up 10 per cent. stock solution. The table gives the number of grams of each chemical needed for 120 c.c. (4 ounces) of developer for the different kinds of plates. Suppose a developer for Cramer plates is to be made. First, place 0.6 of a gram of dry pyro in a 120 c.c. graduate. Pour into this 24 c.c. of the stock solution of sulphite, which is ten times as many cubic centimeters as there are grams of sulphite of soda given in the table. Since this is a 10 per cent. solution, as many grams of sulphite of soda have been taken as are required by the table. In the same manner take 12 c.c. of the carbonate solution, which is ten times as many cubic centimeters as there are grams of carbonate of soda given in the table. The graduate will now contain 36 c.c. of solution, which is ten times the weight in grams of the sulphite and carbonate combined; as given in the fourth column of the table. Thus it is seen how the fourth column may aid one when adding the carbonate solution. Filling the graduate to 120 c.c. with distilled water one will have a developer agreeing with the manufacturer's formula, but made with dry pyro and universal stock solutions. Bromide of potassium can now be added as usual.

In order that the photographer may extend the table, the calculation of one set of results is here given. Take for example, the formula for Seed's plates.

A

Water	16 ounces
Pyro	1 ounce
Oxalic acid	10 grains

B

Water	16 ounces
Sulphite of soda (dry)	2 "

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C

Water	16 ounces
Carbonate of soda (dry)	2 "

(If crystal sodas are used, double the weight.)
Use

A	1 ounce
B	1 "
C	1 "
Water	7 ounces

Making up the developing solution sixteen times will just use all of the stock solutions. Therefore, the quantity of materials used for the total amount of developer is as follows:

Pyro	1 ounce
Carbonate of soda (dry)	4 ounces
Sulphite of soda (dry)	4 "
Water	160 "

These quantities are reduced to 4 ounces of solution by dividing by forty, and will then read:

Pyro	.0025 ounce
Sulphite of soda (dry)	1 "
Carbonate of soda (dry)	1 "
Water	4 ounces

By the aid of the following equivalents, these values are converted into metric weights and measures:

1 ounce apothecary or troy	= 31.1 grams
1 ounce avoirdupois	= 28.35 "
1 fluidounce	= 29.6 c.c.

These results are given in the table. Usually it will be sufficiently accurate to call 1 ounce apothecary equal to 1 ounce avoirdupois equal to 30 gm., and 1 fluidounce equal to 30 c.c.

Should conditions, such as a difference in temperature, a change in the quality of the chemicals, or special printing requirements in the negative, indicate that the quantities should be varied, note can be made of the change and the next solution made up accordingly. The small quantity of some acid which is usually specified in the formula serves only as a preservative of pyro in solution. When dry pyro is used this is, of course, omitted. The amount is so small that no correction is needed in the table.

Nearly all developers for non-halation plates are made by diluting, more or less, the usual solution. The values in the table were obtained in this manner. It is well known that the quantity of sulphite of soda used should vary somewhat with the bulk of the developer and not be in proportion to the other chemicals. Consequently, if a value given in the table results in too yellow negatives from non-halation plates, it is suggested that the quantity of sulphite of soda used be intermediate between the value given for non-halation plates and that given for the regular plates.

PYRO DEVELOPERS

Grams of each chemical for 120 c.c. of solution.
(From formulæ of manufactures)

	Pyro.	Sul. soda (cry.)	Car. soda (cry.)	Car. and sul.
Cramer	0.6	2.4	1.2	3.6
Hammer non-halation	0.224	1.7	0.85	2.55
Standard orthonon	0.442	1.33	1.77	3.1
Seed non-halation	0.34	1.35	1.35	2.7
Eastman N C Film	0.405	2.43	1.61	4.04

STEPHEN E. WOODBURY.

FILM STOCK TROUBLES IN THE TROPICS

ONCE the motion-picture photographer switches his operations from the temperate zone to the tropics he will find himself confronted with new problems, which result through the unhealthy climate, the uncertain light values, and the intense heat.

I know of a cinematographer who made a trip to the Canal Zone during the rainy season. When he removed the film from the cans it was soft, and within an hour of placing it in the box of the camera it was as wet as wet could be, while the following morning it was completely covered with mildew.

How may this be avoided? One cinematographer, working in the heart of Africa, deemed it advisable to carry the film stock in a cooling case, built along the lines of the vacuum flask, and guarded against the exterior becoming hot by covering same with cool banana leaves. Unfortunately, however, this camera man would not reveal the details of his invention, so we must confine ourselves to the generally followed plan.

Before setting out on your journey, store the film in air-tight cans and place adhesive plaster all round the edges of the lids.

If you take my advice you will not burden yourself with more film than you actually need, as it deteriorates rapidly. If you can arrange to have small consignments despatched as required, so much the better.

Once you have arrived at your destination, select a dry and cool place for the film boxes, which are kept in a better condition if placed in an ash can or some other air-tight receptacle, not overlooking to include a dish of fused calcium chloride.

Re-load the camera only just before you plan to "shoot."

You may experience considerable difficulty in turning the crank, for the heat is apt to heat the brass and make it too hot to be operated with the bare hands. A pair of gloves will therefore come in handy.

The developing is best done on the spot, with as little delay as possible.

A camera man of my acquaintance told me of his experiences while working in the Sudan. He discovered that sunrise was the ideal time for developing since the air is not too warm, and the water, which has been standing in canvas

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buckets since the heat of the previous day, is nice and cool.

This operator utilized an oblong-built straw hut, 17 feet by 11 feet, for his dark-room. The inner covering, to keep out the light, was a red and black Turkey cloth, slightly smaller in size. No ventilation was provided, although there were openings both at the top and the end. These were to accomodate the wooden frames; over which were placed ruby glass, ground-glass, and thin wire-netting. He made his own developing frame out of native timber, shaped like a 3 feet 6 inches drum, and painted with paraffin wax. He also needed two troughs, one for the developer and the other for hypo, and made these of wood, joining the sections together with pitch. He allowed for a space of an inch between the film and the trough interior when at work. Each trough had two wings, so that the developer and hypo would be caught on falling from the film and be conveyed back into the trough well. To hold the axle carrying the drum he equipped both of the troughs with slotted side arms.

The developing materials used were B and W "tabloid" pyro soda and a little bromide of potassium. He used eight cartons to develop two hundred feet of film, and placed the solution in a bucket half-filled with water.—ERNEST A. DENCH.

GREASE ON NEGATIVES

A TRACE of grease on the surface of a negative may do no harm (says a writer in *Photography and Focus*) so long as the negative is kept dry; but if for any purpose it has to be re-wetted, say to reduce or intensify it, for example, then the grease will leave a mark unless we take care to remove it first. This it does by making the gelatin at that place more or less repellent of water, so that any solution applied does not act properly. A complete preventive is to soak the negative for a short time in a weak alkaline solution, as, for example, one containing, say, ten grains of sodium carbonate to the ounce. An alternative would be half a dram of ammonia in three or four ounces of water. After a few minutes in such a solution the surface of the film should be lightly rubbed with a tuft of cotton wool while under the liquid and the negative well rinsed to get rid of all traces of the alkali. The alkaline solution must not be stronger than stated above or the gelatin may be softened and injured. Finger-marks are most likely to be the source of grease marks; one should therefore avoid touching the surface, even of a finished negative, more than is absolutely necessary.

HYPO-ALUM TONING

WHEN large quantities of bromide prints have to be dealt with the hypo-alum bath is undoubtedly the simplest and cheapest method to adopt. There is, of course, the trouble of keeping it at the proper heat, and the fumes are not pleasant, but the color obtained is usually good, and with some papers a good purple brown closely resembling that of a gold-toned P.O.P. can be obtained. With this as with the sulphide process the exposure plays an important part in the obtaining of the final tone, and different batches of paper tone to warmer or colder tints. One of the commonest causes of failure is the use of an unripe solution, and as this usually occurs in the first trials it is easy to understand that many have condemned the method without having given it a fair trial. It is essential that a certain amount of silver should be present before putting the first batch of prints into a new solution, and this may be introduced either by putting any waste untoned P.O.P. prints into the bath and leaving them for a night, or by adding a dram of nitrate of silver and a dram of common salt, each dissolved separately in a little water, to each gallon of bath. Once the bath gets into working order it may be kept up to its original bulk by adding fresh hypo-alum solution, care being taken to drain or swab as much of the liquid from the surface of the prints when toned, and allowing this to run back into the bath. The solution should be like thin whitewash, and the precipitate should be very fine and not perceptibly granular.—*British Journal of Photography.*

"GASLIGHT" VS. BROMIDE

IN the minds of many photographers there is an idea that the principal, if not the only, difference between gaslight and bromide papers is one of contrast and, incidentally, sensitiveness, and are apt to choose one or the other as being more suitable to the negatives in hand. There are, however, many other differences, mostly in favor of gaslight paper, which with a sufficiently powerful light is admirable for enlarging as well as for contact printing. The point which we seek to emphasize in this note is the very great ease with which real sepia tones can be obtained with a single solution such as hypo-alum or liver of sulphur. We all know how easy it is to over-expose with bromide paper. Although the prints may be passable in the black and white stage, they assume various wretched yellow-brown tones with the sulphide toner. Moreover, at the present price of ferricyanide and bromide of potassium the cheaper method of toning in the single bath has an undoubted advantage, especially to large users. It is quite a mistake to imagine that vigorous negatives are unsuitable for gaslight paper. It is largely a question of a sufficiently strong light to penetrate any negative, however dense. One well-known printing box is fitted with nine Mazda lamps for this purpose.—*British Journal of Photography.*

TRANSFEROTYPE PAPER FOR DUPLICATING A NEGATIVE

HAVING found that it was possible to make excellent lantern slides with Transferotype paper and automatically to adjust the density to suit different intensities of light, I proceeded to try the experiment of duplicating a negative.

I first found that the X exposure—already described—for a particular half-plate negative was four seconds. I then made three Transferotype prints with exposures of four, six, and eight seconds respectively. These, transferred to

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clean glasses, gave me three positives, which I will call A, B, and C. From these I made nine negatives, as shown in the following table:

Positives.	Negatives.		
A . .	(1) 4 secs.	(2) 6 secs.	(3) 8 secs.
B . .	(4) 6 "	(5) 9 "	(6) 12 "
C . .	(7) 8 "	(8) 12 "	(9) 16 "

The results of these negatives showed that the X exposure given to the positive was too short; the positive was too weak to give proper contrast in the negatives made from it, whatever the exposure. Therefore, negatives 1, 2, and 3 were failures. The other six negatives were distinctly better, although No. 12, for example, was stronger than the original. No. 7 most faithfully reproduced the original.

This gives us a basis for reproducing a given negative: first find the X exposure, and give double that exposure for both positive and negative. Thus in the case in question the exposure for a fully developed print from the original negative was four seconds, the exposure for the positive Transferotype was eight seconds, and for the Transferotype negative from the positive also eight seconds. The duplicate negative is exactly the same as the original—that is to say, it is not reversed from right to left.

It is obvious that by this means it is possible to make not only an exact duplicate of a negative, but one in which the contrasts are either stronger or weaker than the original, as may be desired. Thus, increased strength would be obtained by increasing the exposure for the positive, and similarly increasing the exposure for the negative from it.

If, for example, a given negative were not strong enough for carbon printing, it would be easy to produce one of the required density from it. Or, a negative too strong for enlarging purposes could be repeated in a softer key by keeping the positive on the weak side.

So far I have done nothing in the direction of enlarged negatives, but suggest that this is well worth trying. The difference in cost is very considerable, and those who make large negatives on bromide paper will see the advantage of being able to transfer the film to glass, and so doing away with the necessity of having to print through the paper. I am told that there may be some trouble by reason of a slight mottling or unevenness in the structure of the stripped film. I have failed to detect anything of the sort in the case of the lantern slides, even when projected on a large scale, and I doubt if there is any likelihood of anything appearing at all comparable with the grain of the paper when using ordinary bromide negatives. At any rate, I should expect that an enlarged Transferotype negative used for printing on a matt or rough surfaced paper would give results comparing favorably with prints made from an enlarged negative on an ordinary dry plate.

Those who prefer portraits on opal may readily produce them by the Transferotype method, using plain opal glasses instead of those coated with an emulsion. It has, too, already been pointed out that the paper can be transferred to many other surfaces—real or imitation ivory, china, glass, metal, wood, vellum, paper, and fabrics. In some cases the only preparation of the surface is its thorough cheansing; in others, such as with paper and fabrics, a preliminary coating of gelatin is necessary. All this is fully described in the instructions enclosed in each packet of the paper.

Photographers who are in the habit of glazing prints on glossy bromide by squeegeeing them on to glass may wonder why it is that the film of the Transferotype paper should adhere after it is dry. The reason is simple. The hot water into which the print and its support are placed for stripping confers this perfect adhesion. The lantern slides, for example, not only stand the heat of the lantern, but their film is as difficult to scrape off with a knife as in the case of slides made on lantern plates.

These notes should be sufficient to show that Transferotype paper is a production with many distinct and valuable uses. It will give ordinary bromide prints, prints transferred to other surfaces, duplicated or enlarged negatives, and transparencies for the lantern, the stereoscope, and other purposes. In many of these uses there is not only greater simplicity and certainty in working if certain rules are observed, but there is a very marked saving in cost.—W. L. F. WASTELL in *Photography*.

PHOTOGRAPHING ANIMALS

VERY few professionals include the photographing of animals among the important branches of their work. If a photographer is asked to go to a country house to photograph some valuable animals, or if a dog is brought to his studio, he will do his best in either case to secure good pictures. But a very limited number of professionals really take the trouble to make themselves acquainted with the kind of photographs that are wanted by the owners of animals. Simple, pleasing pictures of ordinary household pets can be made with very little trouble; but when it comes to photographing prize animals the owners want something more than good technical work and pleasing pictures: They want photographs showing that their animals possess good points and are perfectly formed. There are thousands of horses, sheep, cattle, and dogs that have won valuable prizes. These animals are waiting to be photographed—by the man who takes the trouble to learn the difference between a well-bred cow and a giraffe.

No formulæ can be given for making good photographs of animals, but it will be obvious that the photographer must find out what are the good points of the particular class of animals he has to deal with. Take dogs as an example. If it is a good point in a dog to have a long body, foreshortening must be avoided when photographing such a dog, otherwise the picture will be quite useless to the owner. Therefore the line of the dog's body should be, as near as possible, parallel with the front of the camera.

Some dogs have short legs. In cases of this kind the camera should be kept well above the subject so that by looking down the important

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feature of the short legs is emphasized. With long-legged animals a low point of view will give the desired emphasis. It is essential to know how a particular breed of dog is expected to carry its tail—whether erect, straight out, or hanging down. Lack of this knowledge means the wasting of many plates. The head must be carefully noted: The shape of the muzzle shown to the best advantage, and—very important—the ears must be shown, pricked or hanging, according to the point of the particular breed. Information on the good points of prize animals may be acquired with the greatest ease, either from books or from friends who are fanciers. Stud grooms and other servants can often give useful hints.

Once the photographer gets this knowledge, the rest is easy. A plain background, contrasting in color with that of the animal, will be found to give the most satisfactory results. The patience of the photographer is most likely to be tried in getting the animal into a position where points are shown to advantage. The motto is: "Watch and wait."

Unless you are taking a group, have no other animal within sight of the one you are photographing; do not allow anyone to go near the subject except the person in charge, who should be someone that the animal knows well, and let there be nobody else in sight but that person and yourself.—*Professional Photographer.*

Very Rapid Plates

Many photographers have a prejudice against very fast plates. I have often wondered why—because it is a prejudice I have never shared. Of course, the kind of work to be done has a great deal to do with the question, and although few would be so foolish as to attempt to make a negative of a "line" subject on a very rapid plate, many fail to realize that the kind of plate that makes a good landscape negative is not the kind that makes the best portrait negative. It may be made to do so by special methods of developing, and by giving a very long exposure to the portrait. But this involves so much trouble and uncertainty that it is far better to use a very fast plate for the portrait and a slower one for the landscape.

In my own work I have always used the fastest plates I could get for portraits; and I prefer one that, with a suitable developer, gives a soft negative, because, as every professional knows, the ideal portrait negative is one in which there is no clear glass in the shadows, and no part dense enough to prevent light from getting through, even in the very highest light, such as a linen collar.

It seems to me that the advantages of the very rapid plates are so numerous as to outweigh any disadvantages. The only disadvantage, of which I can think, is the danger of over-exposure, but with a good shutter this ought not to occur, and the very rapid plate of today is so well coated that a considerable amount of over-exposure may be given if sufficient time be devoted to development.

I believe that the great majority of portrait negatives are under-exposed, with the idea, I suppose, of getting "sparkle" and a quick printing negative, quite forgetful that the work of the retoucher is greatly increased, and the true likeness of the sitter is lost in the piling on of the lead to remove blemishes, such as freckles and incipient wrinkles, which under-exposure exaggerates so badly. A full exposure will save a vast amount of retouching, which should be regarded as a necessary evil to be reduced by all suitable means. No better means can be found for doing this in ordinary work than full exposure. This can be proved by comparing the results of the usual exposure on a freckled subject and a second exposure of twice the time given to the first. The second negative will not print so quickly, but as most photographers do the great bulk of their work in bromide papers, a little longer printing will not matter.

Very rapid plates enable one also to relegate that relic of the dark ages—the head rest—to the limbo of forgotten things. I believe some photographers still use it. I wonder why! It is quite unnecessary, and although at one time most photographers used and spoke well of it, I never met a sitter who did not detest it—and yet the operator seemed to take a pleasure in prolonging the torture of it as long as possible. I remember only a few years ago having to go to a studio to sit for a large composite group—I put it off as long as I could, but I had to go at last—and the operator seemed to me to begin at the wrong end. He, first, carefully posed me, screwed me up in a head rest, put each finger into place, and then went to his camera and began to arrange and focus it, keeping me stuck up like a tailor's dummy while he did it. A long exposure resulted in a badly undertimed negative, judging from the proof sent me, and I did not order any copies. Now, if he had been using very rapid plates he might have done much better. I think he should have put me somewhere near the position he wanted me to occupy, and then have gone to his camera and composed and focussed the image; while doing so he would have found a natural and easy pose, and could have slipped in his slide and exposed the plate before I knew what he was doing; and with a exposure of a second, or less, he would have obtained a good printing negative. That is the kind of thing I should have tried to do.

Then, of course, for children—who seem to form one half or more of our sitters—the very rapid plate is what Caleb Trotter calls a "shiny cannon." I often wonder how photographers in wet-plate days managed to photograph children at all. I suppose they refused to attempt it except in very bright weather; but they did photograph children, and very well too. It does not seem long ago when the first Watkins' exposure meter was brought out; the highest speed on the scale was only 100, but now we can have plates of 400 without losing any of the qualities of gradation, roundness of image and latitude of exposure that we associate with the slower plates.

When using plates of such high speed it is necessary to take special care that no stray white light gets at them from leaky cameras, shutters, or dark-room lamps. With light of the right color, that is red, and yellow mixed, enough

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can be used to ensure comfort in working. I have found one cause of slight fog in the dim blue light from a very small area of a bunsen gas-burner, which was quite six feet away. I was filling the rack of a developing tank, and the plate was only exposed to the light while the rest of the rack was filled. But this insignificant light was certainly the cause of the fog which showed clearly on the back of the plate excepting where it was protected by the rebate of the rack.

Very rapid plates, of course, must be used with discretion, and it would be rather foolish to use plates of a speed of 400 on a brilliant summer day with an aperture of 4.5 in the lens. A speed of 250 or 300 would be quite fast enough when using the ordinary studio shutter, which I imagine would give an exposure of not less than a quarter of a second. But in the evening and when the busiest time of the town photographer comes—towards the end of the year—then the 400 plate comes "as a boon and a blessing." Not only for children, but for grown-ups also, when anything is attempted out of the ordinary, and when darkness comes on and electric light has to be used, the very rapid plate is invaluable for getting rid of the chalky high-lights and black shadows so common in artificial lighting.

During the past winter I have found the "lightning" plate indispensable—for sitters have been many and the daylight very poor—and the plates are not a bit more difficult to work than the slower ones.—HAROLD BAKER in *Professional Photographer.*

EFFECT OF HUMIDITY ON PHOTOGRAPHIC FILMS

AFTER a plate has been exposed in a telescope for some time, it gradually loses some of its sensitiveness. This action is the subject of a communication to the *Astro Physical Journal* in which the cause of decrease of sensitiveness is laid to the charge of humidity. Experiments were made to determine the effect of varied degrees of humidity on the sensitiveness and developing factor of a Seed 23 to a Seed 30 plate. Experimenting within the range of 0.5 to 85 per cent. of humidity and allowing the emulsion film to come into equilibrium with the air, it was found that both sensitiveness and development factor decreased about 25 per cent. when the humidity was increased from 0.5 to 85 per cent.

This result seems very conclusive and shows the restraining action of a change of moisture on the sensitiveness of the film. It would follow, therefore, that all photographic materials used in photometric work should be brought into equilibrium with the atmosphere in which they are used.

PROTECTING NEGATIVES

THE photographer who only requires a dozen or two prints from each of his negatives does not now usually varnish his negatives, but when he ventures into publishing, especially in post-card size, it is absolutely necessary to preserve the film not only from wear and tear, but from the risk of staining by chemicals or damp. Strange as it may seem to the old hand, there are many operators skilful enough in their way who cannot varnish a plate with the ordinary negative varnish with anything like success. In passing, we may remark that this is usually due to their over-heating the plate, and consequently causing uneven drying before the coating has time to run evenly. There is, however, no excuse for neglecting to use either a celluloid varnish, which is used cold, or a water varnish made of shellac and borax. The latter is best applied by dipping the negative into a dish of the varnish and wiping the back after the plate has drained for a while. Another method which has the advantage of simplifying the printing-in of titles consists of the use of a sheet of very thin celluloid, much thinner than that used for roll films, which is attached to the negatives with a touch or two of rubber solution. If it be desired to print a title in white letters, this can easily be written the right way round upon the celluloid, the writing being placed in contact with the negative film. Any ordinary opaque or black varnish may be used for this, and the lettering cannot be rubbed off in printing, because the thickness of the celluloid is between it and the printing paper.—*British Journal of Photography.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patients as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Automatic slide changer. F. H. Hoffman. 1186192.
Screen holder. J. A. de Bouzek. 1187045.
Shutter. C. B. Bazzoni. 1187235-6.
Shutter operator. L. W. Rath. 1186837.
M. P. projector. A. M. Mucha. 1187443.
Developing apparatus. G. C. Beidler. 1187241.
Print dryer. H. G. Rydholm. 1187102.
Printer. M. Welsh. 1186719.
Color photography. W. F. Fox. 1187421.
M. P. camera. H. Csanyi. 1187270.
M. P. camera. W. P. McNeel. 1186924.
M. P. printer. A. F. Gall. 1187137.
M. P. machine. L. D. Kohlmeyer. 1187153.
Tripod head. W. Jargstorf. 1186992.
Camera. E. V. Boddy. 1187833.
Color camera. B. B. Brigden. 1187884.
Shutter. F. W. Hochstetter. 1188074.
Lantern slide apparatus. Tilley, Austin & Hutchings. 1187794.
M. P. film shifter. P. F. Sperry. 1187935.
Film developing apparatus. G. M. Stehle. 1188217.
Roll holder. F. W. Folmer. 1187895.
Plate changer. T. J. Owen. 1187776.
Etching process. H. M. Williamson .1188870.
Film holder and tray. L. R. Ploss. 1188824.
M. P. film magazine. P. J. Prokop. 1188990.
Color photographs. F. E. Ives. 1188939.
Flashlight. C. Myers. 1189215.
M. P. machine. T. M. Blair- 1188612.
M. P. target. G. A. Kerestes. 1189135.

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THE PHOTOGRAPHIC JOURNAL OF AMERICA

VOLUME LIII SEPTEMBER, 1916 NUMBER 9



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By GEO. G. HOLLOWAY
TERRE HAUTE, IND.

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The PHOTOGRAPHIC JOURNAL of AMERICA

VOLUME LIII SEPTEMBER, 1916 NUMBER 9

NEGLECTED PHOTOGRAPHIC OPPORTUNITIES

By J. CLYDE WILSON

AN advertising man said to me the other day:

"There is an unusual field for interesting creative photographic work that is limited only by the capabilities of the man engaging in it; but such work is not going to come into its own so long as advertising men have to go after the photographer and insist upon getting what they want to use. The initiative has got to come from the other side; the photographer must show the advertiser. You know how eagerly a new style of art work, some unique method of illustration," he continued, "is taken up and worked to death. We are after original styles; but advertising men don't create them, they simply use them when they find them."

As illustrating the possibilities, he cited the very original photographic work of Lajaren Hillier in the pages of *Good Housekeeping* magazine. In this work actual photographs of individuals have been taken in character to illustrate the action of stories, suitable backgrounds being painted in, apparently, to produce the proper locale.

Another advertising man said to me not long ago:

"The kind of photographs we are compelled to use in our every-day grind is absolutely discouraging to me. It is not because they are not satisfactory as mere photographs, in point of technic, for they are. We are getting splendid work from that angle, but as illustrations they are artistically weak and insipid; there is no composition or punch to them. Look at that!" he said disgustedly, holding at arm's length a view through some patented sash-window calculated to display the sash and its use. "Now, why in thunder didn't that photographer put a chair into that foreground and break up that great blank space? It would have been a masterpiece then. With that little improvement its value would

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have been doubled for us. As it is we have to build over our layout to counteract the defect." And he closed by saying: "I believe I'll have my artist paint in a chair there"—with labor $1.50 per hour.

These two instances show the existing demand for original work in the commercial field, and there are many others which we will cite during this paper.

On the other hand, many opportunities are open to the portrait studio which are overlooked or neglected. There is no reason, for instance, why there should be any protracted dull season. The busy holiday time is really a season of abnormal conditions and is not to be taken as a standard of what business should be. It really has a positively injurious result in causing the photographer to take the subsequent slack time for granted and wait patiently without effort for the return of normal conditions. He should not do so. It makes him too easy-going and robs him of enterprise. Letting well enough alone is a drifting policy, and the drifter usually goes with the current until he gets into an uncontrollable eddy, and then he finds himself rushing on helplessly to ruin when it is too late.

In a certain Western city there is a photographer with a neat ground-floor studio within a block of one of the city's largest high schools. It is an inviting place, nicely furnished, well kept up, and with an attractive window. It is not a pretentious establishment at all, does not represent a great investment, but its proprietor is a young man of ability and promise—a comer. Each semester the high-school graduates about two hundred pupils, and it is the customary thing to have a composite group made of the class. It is a splendid job, worth several hundred dollars in individual orders as well as orders for the group, and yet that photographer, so near, never gets it. Why? Do they go down town? you ask. Bless you, no. They travel away out to another part of the city, where another outlying photographer, a little more enterprising than the one near the school, gets it. Is he more capable? you ask. As a photographer, no. His work is not one whit better, but the class thinks it is better. They are sold on the idea that this photographer is a specialist on school groups, and perhaps he is. But he wasn't always so. Only a few years back he was up against the same proposition as the man near the school. In fact he was up against a worse one. The work had always been done by the leading man down town. Nobody ever thought of going anywhere else—until . . . One day this outlying photographer got up on his ear and determined the high-tone fellow wasn't going to get that group again without a fight. He was going after that class hot blocks and show them where they were being fooled into buying good work, admittedly, but at a price he could beat because the other photographer made his prices on the idea that he was without a competitor. He could make just as good a group as the big fellow, and he meant to prove it. He went down to the school and asked to address the class at one of its after-school meetings. He talked to them for some time; told them what a nice establishment he had and how he could make them just as good a group as anybody at a better price. He would prove it. If they would let him undertake a picture of the officers and committees he would make them one free to present the school and they could form their own opinion without risk. Desperate circumstances require drastic remedies. In the meantime the big fellow down town did nothing. Just waited patiently for the committee to seek him out. When the little committee, thoroughly aroused and satisfied they were being exploited, arrived, he made his usual standard terms and smiled graciously upon them and prepared to close the order. But he did not get the chance. The little man outside had already turned the trick with his forehanded warnings and his better price. He put his best efforts into the group and turned out one of the best the school had ever seen. And he has had nearly every group since. The man we mentioned first, across from the school, thinks the other fellow has a stand-in. He says you couldn't dislodge him with a crowbar, but as he has never tried to he has little license

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for his opinion. If he would cultivate the acquaintance of some of the class, get on the job at the track meets and football games and baseball series, he would soon become an object of familiarity among the students, and it is fried-cakes to doughnuts it wouldn't be long before he would be invited to bid on the group. And a little salesmanship would soon put him in the competition, anyway.

We often overlook opportunities like this right at our door because it doesn't seem possible that we could land them. More sales are lost through conservative opinion than through failure of one's effort. If you see a possibility of selling some pictures it is never wise to assume that the other fellow probably wouldn't want them. Opportunities turn up on the most unpromising "hunches." A certain manufacturer made a window display in one of his dealers' windows in which a man was shown at work making soap with a small soap-making outfit. It was an instructive exhibit and, because it is human nature to be interested in the way things are created, it attracted quite a throng and proved a good advertisement for this particular kind of soap. A photographer who had done some work for this manufacturer saw it and it gave him an idea. He got into touch with the advertising department at once.

"Are you going to tour that exhibit?" he asked.

"No," came back the answer, "we can't afford to. It is costing us too much as it is."

"Well, it seems to be making a hit," returned the photographer; "don't you think it a good advertisement?"

"Oh, yes, fine," said the advertising manager, "but it wouldn't pay to send it around the country."

The photographer here sprang his coup.

"Why wouldn't it be a good idea to photograph the soap-making right in your factory, have some transparencies made from the negatives, color them, and build them into some kind of device, such as a revolving lamp-shade for instance, and tour a lot of them around the country instead?"

The advertising manager thought it over, but concluded it would be too expensive.

"Why don't you try it in a small way?" asked the photographer, "and see how it takes with the dealers."

The result of the suggestion was that a few sample lamps were made up and sent out. They made such a hit that the firm came back with an immense order, and ordered several hundred sets of ordinary photographs besides. The exhibit was more complete than the miniature soap factory in motion originally shown, for it told the story of soap-making from the gathering of the ingredients to the pressing of the finished cake, and the transparencies being colored and revolving slowly invariably attracted attention.

Many little opportunities like this turn up when one is on the alert for them, some not so large or profitable as others, but all worth while at least. The writer once picked up the morning paper and noticed the advertisement of a local motorcycle dealer who announced the arrival of a whole trainload of motorcycles, which he stated was the largest shipment of the kind which had ever been received in the city. He immediately called up the dealer and suggested to him that he could get some very spectacular advertising illustrations and also some rather good publicity by photographing the trainload, properly placarded, and then unloading to a caravan of trucks, well covered with signs, and photographing that. The operation over, the loaded trucks could proceed through the main streets to the store. Needless to say, the dealer saw the point at once and the order was secured. Although the direct profit was trifling, the interest shown by the photographer and his enterprise won the dealer's good will and he became a regular customer thereafter. In cases like this the immediate profit is not always the important one.

A milk concern in one of our large cities was advertising the cleanliness and wholesomeness of its products, and to emphasize these desirable qualities harped upon the value of its milk as food for growing babies. To stimulate interest in its work it made arrangements

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with six photographers, located in as many different sections of the city, to assist it in conducting a baby contest. The plan was to run a series of large advertisements in the papers offering a series in prizes for the most perfect babies raised upon the firm's milk. In order to enter the contest it was necessary to clip a coupon from the said advertisement which was to be presented at any of the six studios mentioned in the advertisement. With one dollar it entitled the parent to two pictures of the child. One of these was entered in the contest by the photographer, with the coupon, including the name and address, age, etc., of the child. The other was given the fond parent. Think of the dozens of orders this scheme sold for these photographers! They say they were swamped with them. There is no bond quite so strong as parental love, and every parent thinks his own offspring the salt of the earth. The dollar in this case merely paid for the two pictures and easily compensated the photographer where a larger order was not forthcoming. But in most cases, if the picture was at all good, more were ordered. I wonder what milk company of any account would be able to resist such a proposition as this advanced by a single good local photographer?

In a middle-western city there is a post-card photographer who has been doing business a number of years and whose name is familiar to almost everyone, and yet who has never had, in the strictest sense, an established studio. What is more, he is a very prosperous photographer, and is said to be worth a great deal of money. He does not seem like a photographer at all. He is a hustling business man. He looks it, acts it, and it is reflected in his surroundings. Do you know the mere appearance of success is a business asset of untold value. It begets confidence. You feel intuitively that a man who can invest his premises with an air of prosperity knows what prosperity is—he knows his business. And in this case that is the truth. This man does know his business and he also knows his public. I said he has never had an established location, and that is true. His business is constantly upon the move. In the ordinary course of things you would say that was a fatal business policy. The establishment which cannot stay in one place long enough to grow a good foundation seldom lasts very long. And yet this post-card photographer thrives. Moving is his policy, and because he moves he thrives. That is because his is not like other businesses in one particular—in the main it is not a repeating business. The average merchant expects to sell the same customers many times. He wants them to come back. He tries to render a superior service, to deliver a good quality of goods, and to keep you sold. The purchaser of post-cards, on the other hand, does not regard his purchase seriously. He usually is snapped in a spirit of fun and accepts the results light-heartedly and without condemning the photographer if unsatisfactory. He gets all he pays for and doesn't expect much. Cheap trade like this demands a business of volume. Such studios must be where the crowds are. What is more, they must be where a certain kind of crowd is. Not a certain class exactly, but people in a certain mood. Few of us would think of starting out deliberately to have some twenty-five cent portraits made, but in a picnic crowd or a holiday stroll we will undergo the operation with zest. This photographer knows this, and he knows also that rents where the throngs gather are expensive. Leases are made for long terms and a crowd of this fickle character finds new stamping grounds on very small pretexts. It is not worth while to be tied to long, expensive leases of uncertain outcome. This photographer has a better way. A real estate firm keeps him apprized of all down-town vacancies, and whenever one of narrow frontage is open his agents bid for temporary possession of it, on a month-to-month basis, vacate on twenty-four hours' notice. Rather than have expensive property lying idle, owners welcome such productive opportunity which enables them to hold the property open for a suitable long-term tenant, and they are willing

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to lease it to this photographer at his own terms. In this way he is able to secure the best locations at comparatively low rents. In order to retain his prestige, his store-fronts, like those of ten-cent stores, are always identified by a certain standard layout. His sign across the top of the window features the name in a standard style always the same. The inside of the studio is always laid out in the same way, furnished with new, up-to-date furniture, and equipped with Cooper-Hewitt lamps. Every effort is made to get away from the idea of inferiority. The window is lettered with large gold letters of the most expensive kind. The help is always neat and well-dressed and of the better type. It is a place no one of any class would be ashamed to be seen in. Best of all, this photographer makes money. He is an opportunist. He leaves no stone unturned. He does six-hour kodak finishing, employs a colorist, and sells colored enlargements of very good quality where orders are not for immediate delivery. He sells small frames, post-cards, souvenirs, etc., all well displayed in cases and suitable racks. In his storehouse one or two outfits are always ready to be set up on short notice when his agents spot a new location. With him there are no neglected opportunities.

Sometimes necessity spurs one to intensive effort and there is unearthed an opportunity such as one never dreamed of. Such a case is that of the photographer who bought an outlying city studio which had not paid but which this photographer was sure could be made to do so. He blamed the last proprietor and so when he bought it he lavished his money upon it with a prodigality which was unworthy of so clever a man. He soon found however that he had been deluded. As a portrait studio, it was impossible. On the other hand, its location so far out did not enable him to compete successfully with the down-town commercial photographers in that field of work. He was up a stump. There was just one ray of hope. Nearby was a very large stove factory. He didn't know whether stoves were sold from photographs or not, but he thought he would find out. He put on his hat and went over to see the advertising manager of the stove factory.

"I'm the photographer across the way," he said, "and I'd like to make your photographs for you. I have a nice studio, well-equipped, and its handy."

The manager smiled.

"I'm sorry," he said, "but its no inducement at all. You see we photograph them all right here in the factory."

The photographer swallowed hard and asked to see the photographs. They were average in quality and he didn't know that he could improve upon them. But he had to do something. Business was bad and he had to make some money somewhere and mighty quick.

"You are not getting as good work as you ought to," he told the advertising man; "but you are probably getting as good as you can get in the factory. If you will send a stove over to my place I will show you how much better pictures you could get in my studio—handy as can be—and better lighted."

Well, the upshot of it was that the advertising man took compassion upon him and sent over a stove. The photographer did not know how he was going to make good with it, for he had never photographed a stove before in his life; but he set to work with zest to win, and win he did. He made direct photographs so good they attracted the attention of the whole stove craft, and today manufacturers are sending their stoves to his studio from every corner of the country. The man who was unwilling to have a stove photographed out of the factor now has them all done in this photographer's studio. They say his unique business claims the patronage of fifty-seven stovemakers located throughout the land. Surely that is seizing opportunity with a vengeance.

A great many probably already know of the case of the professional man whose ill-health was the direct means of opening up one of the most lucrative photographic fields that has ever been discovered. This man had been an amateur photographer—and a good one; but his health broke down, and he was compelled to give up his profession and find something which would keep him

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out of doors. Many a man who has had this problem suddenly thrust upon him has not looked upon the prospects with quite the same enthusiasm as when he talked about it when it was a shady and impossible dream. A business which will keep one in the open air looks very fine until one begins to run over the different kinds of jobs which enjoy that peculiarity. Farm hand, laborer, teamster, longshoresman, chauffeur, or gardener are not callings that invite one of delicate frame. Moreover, they do not appeal any too strongly to finely attuned natures, used to our more civilized refinements. This poor sufferer, however, took heart. He had his camera. He had an artist's eye and feeling. Let us see what he did. Just wandered out into the country in the spring and photographed the countryside in its natural robe of green, touched with the color of cherry and apple-blossoms. He photographed it as well as it could be done. He had the time and the taste and he lavished his best talents upon the effort. And these scenes were printed in platinum and tinted faithfully after the original. Put upon the market they had an immediate sale, and today they are known from one end of the land to the other. They have bought a great estate and perhaps made their maker more famous than he might perhaps otherwise have been. At any rate they have made him the discoverer of another neglected photographic opportunity.

And so one might go on giving other instances of neglected opportunities which it has been left to an individual to discover. And they are as plentiful today as ever. Another generation will see photography making greater strides than ever. When I told a friend not long ago that we had motion-pictures twenty years ago, when I was a boy, he would not believe me—thought they had just been discovered the other day. What had really been discovered were new applications of moving photography to fiction—an opportunity which had been neglected for two whole decades. And those who made the discovery are today millionaires. All the photographic opportunities are not yet exhausted.

THE GENESIS OF A PICTURE

By W. H. PORTERFIELD

IT was in the month of October, 1914, while in search of pictures (please notice, dear reader, that I say pictures, not photographs), that my course took me along the shores of Lake Erie, near one of the local summer resorts. The day was somewhat stormy, with a considerable gale setting in from the southwest, and great masses of clouds were piled up in mountainous proportions above the Eastern horizon.

As it was rather late in the fall, the resort was deserted, and one could wander about undisturbed by the crowds which in other days thronged the promenade. It was not too late, however, for the purpose for which I was there, and the large urns which border the aforesaid promenade had not yet been taken indoors for the winter, a procedure made necessary if they would serve to adorn the grounds another year, because snow and ice are most destructive elements when set in motion by the zephyrs that play over Lake Erie in the winter season.

The object which forms the basis of this article had been selected on a former but less favorable visit, and the motive was suggested while watching the clouds which on any windy day may be seen in various shapes and forms out over the lake. Therefore no time was lost in proceeding to execute the design which had been pretty well thought out between visits.

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THE ADVENTURERS BY W. H. PORTERFIELD

Being equipped with a Graflex of 12 inch draw, carrying a short-focus lens (8¼) inch), it was possible by racking out and working "close up," to fill the plate (4 by 5), and apparently to increase the size of the shrubs and give them tree-like proportions (Fig. 2), whereas in reality they were only about the thickness of a man's thumb, or, to be more exact, perhaps three-quarters of an inch in diameter, and the distance from the edge of the urn to the lowest of the main branches was not over ten inches (see Fig. 1).

Having secured the negative from which No. 2 was made, the next step was the making of a contact positive or transparency, and from that an enlarged negative, size 11 by 14. Then on a sheet of vegetable tracing paper the clouds were created, and the paper bearing the clouds fastened to the reverse side of the enlarged negative referred to above. From this combination a print was made in carbon.

The picture was now practically finished, but was still minus the figures. These were quickly put in on the 11 by 14 carbon print with a brush and India ink, consideration being given to size and location in order to emphasize the height of the trees, and also to secure in the drapery of the figures the effect of tempestuous winds, such as one would associate with these high and exposed places. The print was then copied on a small plate (again 4 by 5), and the entire process of enlargement gone through with in order to smooth up the clouds and obtain in the figures the same texture which prevailed in the balance of the print.

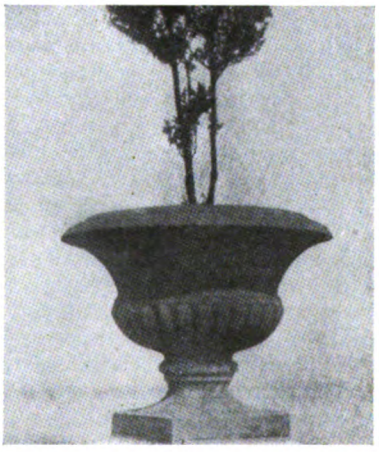


FIG. 1

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The final print, reproduced on the foregoing page, was then made, and was satisfactory except that the high lights observed among the branches were painted out with dissolved carbon tissue



FIG. 2

(using the same stock from which the print was made), thus removing a very disturbing note due to the unavoidable inclusion of brilliant clouds which were obviously out of focus when the original negative, Fig. 2, was made, and which were more easily removed in the manner just described than by any retouching method.

In using the camera simply as a means to an end, it is often possible, while employing the instrument admittedly in ways decidedly unorthodox, to so transform non-pictorial subjects that they bear no resemblance to their original appearance; yet if material is secured that by slight manipulation will result in a picture, may we not say that the effort is justifiable?

As stated in the beginning, it was the desire to make a picture, and not merely a photograph of the subject that was responsible for the liberties which were taken with this defenceless urn, and to him who in the puerile conception of his art would condemn such methods I offer the straight photograph of the urn, as shown in Fig. 1, while to the photographic outlaw, the man who dares to indulge in iconoclastic excursions—the artist, if you will—I respectfully submit the finished picture.—*Amateur Photographer.*

ADOPTING SLIDE PUBLICITY TO INCREASE YOUR BUSINESS

By ERNEST A. DENCH

"WHY do they give us books instead of pictures," was the remark I overheard after a photoplay over-burdened with explanatory matter had been run off the screen. This adequately expresses the opinion of ninety-nine out of every hundred movie patrons.

The same is true of slide advertising, which, in order to prove effective, must be in complete harmony with the surroundings. Your announcement should live up to the "every picture tells a story" slogan. The greatest obstacle in the way of the widespread adoption of illustrations in newspaper, street-car, and billboard advertising is the expense. Artists, cuts, and color printing are costly for local purposes, and it is only national advertisers who find same a profitable investment. They are able to use them in large quantities, consequently greatly reducing the cost of production. It is for this reason that so many photographers have to remain satisfied with plain announcements, which undoubtedly serve their purpose.

But there is absolutely no excuse for the photographer employing such copy on the motion-picture screen, for it costs as much for a slide without a picture as it does with one. And what is more, you can indulge in the luxury of colors since no slide manufacturer worth his salt turns out designs in black-and-white.

There are other compensating advan-

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tages, too. Children are keen movie fans, and if the eye is appealed to they can grasp the purport of your message. The picture accomplishes this as easy as kiss your hand, and as most children delight in telling those at home what they have seen, your announcement will be brought to their notice in an indirect way.

Have you considered the foreign element as well? With their smattering of English, it is a moot point whether they can comprehend a plain announcement slide. The picture, however, knows no language, so you have them immediately interested.

The photoplay author, in calling upon explanatory matter to help along difficult stages of his story, has to bear in mind that each word means one foot of film. What you should realize is that in the limited time your slide occupies the screen it has got to sink in, and the clever picture with a few appropriate words thrown in for good measure will get across, while your neighbor is extravagantly using up the English language.

The slide companies put out stock designs. A typical slide put out recently showed a baby with an adorable smile. At the side was this message:

"NOW IS THE TIME TO HAVE BABY'S PICTURE TAKEN. TO-MORROW MAY BE TOO LATE. DON'T DELAY."

All you have to do is to write in your name and address at the bottom of each slide. Stock slides cost from thirty-five cents to one dollar a piece.

The slide manufacturer, when preparing a stock slide for the photography trade, has to make it apply equally well to photographers throughout the country. Occasionally, however, he slips a cog, but this is not altogether his fault; you are alone to blame for purchasing a slide which misrepresents your business. It may, on the other hand, just fit in with the individual needs of your competitor a few blocks up the street.

Photoplay audiences should not be disillusioned; the screen must be kept free from abuses, for once spectators discover that you are in the habit of misrepresenting the facts, they will evince less interest in your announcements.

Therefore, when purchasing a stock slide let the deciding factor be: "Does it apply truthfully to my own store?"

You can use the stock slide and still give photoplaygoers the impression that you are decidedly distinctive. The motion-picture exhibitor believes in hiring his screen to one advertiser in each trade, consequently if the slide has been prepared especially to boost your store there is no fear of overlapping.

The only way a person could discover that your stock slide is used by a competitor would be if he were a patron of more than one motion-picture theater. Here, again, you would secure a brilliant victory.

So if you notice a fellow-trader using a stock slide which takes your fancy, do not let go and do likewise. Select something different.

It is hard to maintain the interest with single stock slides, but with a good series or serial you can actually make folks look forward to the next slide. It is essential to secure the exclusive rights for your town, which is now possible, since the slide manufacturers have produced a number of excellent series. This concession, which may be obtained by paying an additional fee, is important because the slides can be filled in to suit almost every business.

In a series of slides you can put over an entertaining story, humorous in parts and educational in that you point out why folks should trade with you. A clever scenario writer-artist and skilled slide manufacturer can do wonders for you in this connection.

While the stock slide covers a wide area, it cannot be extended to establish the personal touch between the photographer and prospective customer. Its versatility ends just where it is essential to present the intimate appeal which accounts for so much.

What is that elusive something, the personal touch? To my mind, it is by introducing yourself to your prospects.

Where is your store located? True enough, you will not neglect to include your name and address on the stock slide, but first impressions are lasting. It is my intention to advocate the adoption of what I may term the photo-slide for want of a better name.

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On your visits to the local photoplay theater you will have noticed that the exhibitor is prone to using announcement slides of forthcoming productions. On this kind of slide an important scene is reproduced from the picture and tinted in natural colors, while the blank space is used to good advantage with a brief description of the film.

If you wish to plan an advertising campaign along similar lines, it is up to you to have some photo-slides specially designed to conform with your individual requirements. The best way by which to present the personal appeal is by having a photograph taken of the exterior of your photography store. You can then forward same to a reputable slide manufacturer, who will make a slide out of it in natural colors and add the desired description.

The slide should have two marked effects upon spectators. First, visualize for them exactly where your establishment is situated so they may recognize it on sight, and secondly, leave a favorable impression.

Having Your Slides Shown

In selecting the most suitable motion-picture theater for your slide announcements, several points have to be taken into consideration.

Suppose you are situated in a residental section. In most towns, at least, the down-town photoplay shows attract folks from all sections, so should you decide upon a down-town theater for your announcements you are paying for scattered circulation.

Not only that, but the exhibitor rates the advertising value of his house at a much higher figure. Few towns possess local newspapers which circulate exclusively in one section, and as you draw the bulk of your business from surrounding blocks it is advisable to pick out a photoplay theater within a few hundred yards from your store. This should be comparatively easy, because such conditions exist in most towns.

Motion-picture theaters may be divided up into two general types: One is the nickeldrome, which has been converted from an empty store and seldom accommodates more than five hundred. It usually shows the oldest films and caters to a cheap patronage. "Circus" advertising proclaims this fact in nine cases out of ten. Although the motion-picture theater is a democratic institution, the well-to-do working classes prefer to patronize the classy building which has been specially erected for motion-pictures. It is not because they refuse to associate with their poorer brothers and sisters; quality is the deciding factor. For five or ten cents more they see a longer and better program amid more comfortable surroundings. This modern kind of show usually accommodates at least one thousand.

So far so good—the rest depends on the managerial policy. The best way to discover this is by visiting a desirable theater as an ordinary patron, and if your trade is already represented on the screen, the theatre is not available for the time being.

This may strike you as peculiar, since no newspaper grants a monopoly, but it is the custom in slide advertising.

The healthiness of a newspaper may be judged by the volume of advertising it carries, but it is the reverse in the case of the motion-picture theatre. The fewer the slides shown the better, as time is precious, and if the exhibitor is to give each advertiser the service he pays for he can only do so when his slides do not exceed one dozen. When the number is in excess of this the operator usually whips each one off before spectators are able to read same.

When you have satisfied yourself on all these matters you can interview the exhibitor, who will probably suggest a six months' contract. You may be averse to this, but your signature would be justified in view of the fact that the rental, which will vary from five dollars to ten dollars per month, according to size and location of theatre, will work out cheaper than on the weekly basis. It will also afford you protection, for your competitor will not have an opportunity to put one over.

One insertion of an advertisement seldom produces results, and the same

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is true of slide advertising. You have simply got to hammer the facts home to the public, for the constant seeing of your name will go right home. Another thing, do not neglect to change your slide frequently.

If you are running a series or serial, however, you must remember that most theatres change their programs daily, and only a proportion of patrons attend regularly. Some days the program does not appeal to them, so they favor the rival show, and you could therefore not expect to have many follow same from beginning to end unless you took a system in charge.

Every now and then a photoplay producer releases a series or serial. It is booked by the exhibitor, who arranges for it to be shown at his theatre in weekly instalments. Those of his patrons—and they constitute the majority—take good care to be present each week on the evening set aside for the instalment. So if your slide series or serial started off with the photoplay it would be seen in its entirity by most folks. Therefore, when planning your slide series or serial, arrange with your exhibitor to run it simultaneously with the film production.

Then there is the all-important matter of ordering the stock slides. You will undoubtedly prefer to purchase these one at a time, as new designs are constantly appearing.

The slide manufacturers find that there is so much correspondence involved in executing orders of less than one dollar that they prefer same to be given to the exhibitor, who orders slides in profitable batches. It saves you the trouble of ordering.

THE HANDS IN PORTRAITURE

By F. C. LAMBERT, F.R.P.S.

HOW to arrange and light the hands of our sitters is one of the several problems that is very frequently facing us when on portraiture intent. Of course, we may evade the difficulty by taking head and shoulders only, or by hiding the hands behind the body, or covering them with drapery. This course is not only unworthy of the artist, but also extremely foolish, because the hands of most people are a very important part of their living pose. Every thoughtful reader of these notes will, after a moment's pause, readily recall some friend who has some trick-habit with his hands. One "twiddles" his watchchain, another grasps the lapel of his coat, a third puts the tips of the fingers of both hands together, etc. Now these little tricks of habit are an integral part of the *tout ensemble*, which together make up the outward and visible portraiture of the man, for it is a grievous but common mistake to think that portraiture consists in making a map of a person's face. Human nature and character together form an exceeding complex and subtle whole. To this all parts of the body contribute. The head, of course, is the chief, but it is by no means the only factor. Among these factors certainly the hands occupy a very important position.

In the present chapter we propose to confine our attention chiefly to the subject of hands as a part of characteristic portraiture. And, lest there be any misunderstanding, let it be said at once that these notes and illustrations are to be taken as suggestions only.

The thinking worker will very properly hesitate in accepting anything like rules of procedure. He will wisely wait to judge for himself, compare his own practice and observations with others, try a few experiments in verification or refutation and so on. The purpose of these random notes is to stimulate and

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encourage each worker to look, think, and experiment for himself.

The reader and writer presumably will agree upon one point which very soon forces itself upon every observant portraitist, viz., that the hands of his sitters vary almost as much as do their heads and faces. Their hands may be large or small, fat or thin, long or short, narrow or wide, large or small boned, smooth or wrinkly, clumsy or graceful, restless or active, and so on *ad infinitum*. We next observe that the hand is nearly always in harmony with the rest of the body. Tall and lanky people have long and narrow rather than short and wide hands, and so on. Moreover we are soon led to observe that frequently one may observe a harmony between the mental character and the hand. Thus a high-strung, delicate, nervous, or artistic, active-minded temperament is usually accompanied by delicately shaped and gracefully moving hands and fingers, just in the same way that a coarse character is frequently accompanied by large, rough, clumsy hands.

Again, age is to some extent indicated by a certain subtle but indescribable something on the hands.

Other indications might be adduced, but probably enough has been said in this direction to prompt the reader who has not already noticed these things for himself to begin to do so at once.

In our first illustration we show the right hands of five different people—all women folk, of ages from twenty to sixty years or so, and of considerable variety or difference as regards figure or build. It is easy to arrange them according to age, thus: C., A., B., D., and E., the youngest of the party. It is also easy to see that they are all different in outline and general character. Note that the lighting and general pose is sufficiently alike in all cases for comparison. The operator behind the camera asked them all to hang their hands "something like this," over the top rail of a clothes-stand. It will be seen that each one has given a different interpretation of the object lesson. The best imitation is probably E. In this way we may see a practical example of degrees of observation and imitation, power, gracefulness, etc., in different people.

We next learn from this experiment that, although the several hands are all in a somewhat similar position and lighting, yet considerable differences of shape and size are suggested by the various arrangements of the fingers. For instance, C. is stiff and trim. B. somewhat formal and too regular. D. is apathetic—experimenter. A. and E. are more agreeable in outline and variety of form. Thus we are led to infer that variety of outline, A. and E., is more

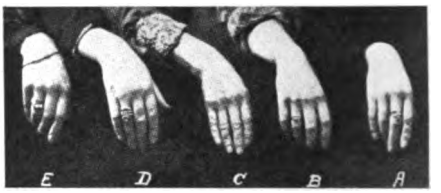


FIG. 1

pleasing than a too symmetrical form, C.; also that the turned fingers of E., B., A., are more graceful than the stiff arrangement of C. or lifeless limpness of D. We must also notice that light and shade on each hand are largely determined by the arrangment of fingers, and that this light and shade play a very important part in showing up or hiding this or that character. For example, the flat lighting of hand C. draws attention to every finger, and shows the fingers to be thin, with wrinkled skin. In B. the curving of the finger ends puts them in shade, and so, apparently, shortens them. In E. each finger is shown to full length, but their curved nature gives a pleasing variety of form and lighting.

So far as regards comparing different hands. And now a note or two as regards the two hands of the same person seen in different pose, lighting, etc. Now let us compare Figs. 2 and 3. Here we have the two hands, placed together, of the same person in the same studio lighting and at the same distance from the camera. A rapid glance is enough to tell us that in Fig. 2 the hands look larger than in Fig. 3.

First we notice that they are further

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THE HANDS IN PORTRAITURE

By MYLES STANDISH WARFIELD
KANSAS CITY, MO.

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apart. Next we see that the hand part of our study is chiefly occupied with the backs rather than the fingers. Again, these backs are presented full face to the lens—*i. e.*, not edgeways. And yet again they are in strong light rather than in shadow. Now all these factors together tend to make the hands look large.



FIG. 2



FIG. 3

We all know the common complaint of photography making the hands too large. Of this a word presently. But now let us turn attention to Fig. 3. Note the difference. The hands are closer together, and one over the other instead of in a row as in Fig. 2. The backs of hands are little seen; in fact this part of our picture is chiefly made up of fingers; also the hand is presented to us edgeways rather than with the back of the hand full face to the camera. Moreover, the fingers are all well curved—not stiff or straight, the lines of shade between the fingers thus tending to cut off the space. We have a more pleasing variety of light and shade generally in Fig. 3 than in Fig. 2.

We may thus deduce the following hints for studio experiment and practice: Avoid spreading the hands out when they are together. Show edge rather than the flat of the back to the lens. Let the fingers be curved rather than straight, etc.

In Fig. 4 we see the difference between showing the inside and the outside of the hand. The sitter's right hand is nearer to the lens than is her left hand, so that we might well expect the right to come out looking the larger of the two; but the contrary is rather the case. This is due to two contributing causes. First, the nearer hand is turned slightly edgeways to the camera, and, secondly, in the one case we see the back, in the other the inside of the hand. In the further hand the fingers are rather more stiffly posed and the light falls on them more than on the nearer hand. Thus we may take the hint that distance from the lens is *not* the only thing to think of when we wish to make the hands look large or small. Note also the effect of a light or dark background behind the hands in this instance.

In Fig. 5 we have an object lesson in the matter of lighting. Here the two hands are more or less similarly placed against the same kind of background. The sitter's right hand, however, is in shade, while the light falls full on the back part of the left hand. In consequence, the left hand seems a size or two larger than the right one. The contrast effect of background is also here illustrated.

In general one may perhaps say that contrast of lighting tends not only to draw attention to the hands, but tends also to make them seem larger than harmony of lighting. And also it seems to be in general true that a light hand against a dark background seems to come out larger than the same hand in shadow against a light background. Space available only permits of one more example, viz., Fig. 6. This in some measure illustrates the last remark. The sitter's right hand is more or less in shade and comes dark against a light ground—while her left hand in moderate light comes as a light against a dark ground.

This example is given as a sort of antidote to all that has herein been said. There is a possibility that some reader may be tempted to pose the hands of his sitters—in consequence either of some preconceived notions or experiments which he may make. This we venture to think is, in general, a mistake. Perhaps the old saying, *ars celare artem*, applies to hand posing more than any other part

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of portraiture. The posing must be so deftly done that the sitter does not know that it is being done at all. This sounds contradictory nonsense, perhaps, yet it is good, solid advice and true. In brief it just amounts to this: That the photographer's part is, not to touch the sitter's hand, not to talk about hands, but simply induce the sitter's mind to be so occupied that he or she will unconsciously and naturally pose the hands, and you, the operator, have just got to wait and watch for the happy moment.

Now we see the head and hands are in harmony. The sitter's attention is being given to the lace-mending job on hand at the moment—a physical pose was watched and waited for. This illustration is not put forward as a faultless example. On the contrary, it would be easy to point out several shortcomings; but it may serve to illustrate the fundamental principles that a portrait should show something of the *general character* of the person; that the head should be the part to first attract our attention; that the hands should be subordinate to the head; that their pose and occupation should be in harmony with the position and expression of the head; that they should help to balance the composition and aid the general decorative arrangement of the picture.

Large vs. Small Hands

Just one word on the inartistic, unsound, untruthful notion that the chief art of hand photography is to make the hands as small as possible.

The essence of beauty is harmony, proportion, fitness. Obviously, then, a hand, a foot, a waist too small, are as inartistic as one too large. The abstract ideal figure for man or woman, of course, is only an ideal; but the nearer the concrete example approaches the ideal the more harmonious are all its parts. A Venus of Milo with a nineteenth century pinched-in waist is too absurd to think of. Similarly the Discobolos with a small hand would be ridiculous. The same hand or head may be too large for one body—too small for another. A too small head is far worse than a head too large. Actual size is nothing. Proportion is everything.

THOUGHTFUL PAUSES

THAT which lives: That in man which does not perish is his personal influence. Since we are creatures of environment and heredity, if you wisely shape the environment of those about you and transmit that which is good to your—and their—posterity, you will live. And the waves of time shall dash impotently against your life, next year and next century. You will be living ten generations hence in ten thousand or ten times ten thousand descendants of yourself and of those whose lives your life beneficently influenced. And you cannot buy life with gold nor with great works that pay dividends in dollars, but with service and self, coined into deeds of unselfishness.—EDWIN LEFEVRE.

THE clerk who is late in the morning is usually the first one to leave the place at night.

To me art is the expression of beauty in whatever form it may appear—in the home, in the shop, in daily life, in thought and work. It is something infinitely deeper and broader than the form through which it manifests itself. Its measure of Beauty is directly proportioned to the sincerity of purpose and the fineness of the ideals that give it form. The conscious effort to understand and appreciate a work of Art strengthens our own ideals; and in striving to express our ideals, through whatever task comes to our hands, we may make our own life and the lives of others happier, more worthy, and more beautiful.—ERNEST A. BATCHELDER.

GOODS may look well on the shelf, but the cash looks better in the drawer—and you can always get more goods. Sell the goods.

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PHOTOGRAPHIC METHODS

By C. H. HEWITT, F.R.P.S.

THE day has certainly gone by when every worker was firmly of opinion that he could develop from a plate with unknown exposure exactly the type of negative he desired. Indeed, it is now a fairly well-known fact that once the image has appeared over the whole of the plate no modification of the developer will affect the result. So that the old idea of adding a little more pyro or bromide to counteract over-exposure is now quite obsolete.

In considering development control, therefore, we must take three aspects:

1. The control possible in the case of unknown exposures.
2. The control possible when exposure may be adjusted to begin with.
3. The control possible when plate and exposure may be selected and adjusted respectively.

Let us assume that we have a number of exposed plates to develop, about which we know very little, except that they have been exposed. How shall we proceed in order to get the best results? One course open to us is to treat the plate normally in every respect—that is, to employ a normal developer for a normal time. If the exposure has been correct we shall in this way produce a normal negative. If it has been under-exposed we shall most probably get out practically everything there is on the plate. If over-exposure has been given we shall have a somewhat thick negative with possibly some flattening of the brighter tones. This, it may be said, is not control, but simply a mechanical method of developing. Still, we may take it as a starting-point. Reverting to the under-exposed condition, we may in certain cases do something to coax out the detail. If we are working with pyro-soda the plate may be lifted from the developer, drained for a couple of seconds, and then laid in an empty dish and covered up and left for a minute or two. The effect of this is a *selective development*. In the lighter portions of the negative there has been plenty of light-action, and so development goes on and the pyro in the film is rapidly used up. In the shadows the pyro is not so exhausted and continues its work, bringing up the detail. Some workers prefer to carry out this principle by soaking the plate in clean water—*soaking* not rocking, so that the developer in the film is left undisturbed as much as possible.

It is an advantage in many cases of under-exposure to allow the plate to soak in tepid water, for all chemical action takes place more rapidly when the temperature is raised; and development is a chemical action. The temperature which is safe will depend on the character of the gelatine used for making the plates, and also on the temperature of the air at the time. That is, the same plate will be more liable to melt if the weather is hot, even though the actual temperature of the water is the same.

If the plate proves to be over-exposed, the only possible variations in treatment are (*a*) to prolong development above the normal time, and (*b*) to increase the strength of the developer—which has much the same effect as (*a*), but saves time. In either case the negative will be excessively thick, but this added thickness will give an opportunity for reduction with Farmer's or any other reducer which tends to work more on the shadows than on the high-lights, and so to increase contrast.

But now, having developed one of our batch of plates and found it over-exposed we may proceed with the next one, on the assumption that this is also over-exposed. We shall then modify our developer before we apply it to the plate, increasing the quantity of pyro and also of bromide. It may indeed be well to double the pyro and to quadruple the bromide. Starting development with this solution, we shall probably find that it will be some considerable time before the image appears, even though the plate proves to be over-exposed. Now,

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we must bear in mind the fact, which has been well established by exhaustive experiments, that bromide has no effect on the strength and gradation of the image if the plate is fully developed. In fact, if we develop for seven or eight minutes the effect of the bromide is usually lost. So that what we have to do is to stop development before we are losing the effect of the added dose of bromine. In other words, we must stop development as soon as the deepest shadows begin to grey over. Having fixed the plate, we shall most probably find that the negative has good gradation but is very thin with nearly clear glass in the shadows. Such a negative is almost ideal for intensifying, and when so treated should be strong enough for most printing processes.

But it may be asked, supposing that the plate which is being treated in this way with a very restrained developer for over-exposure proves to be not over-exposed. This state of affairs will be indicated by the high-lights coming up and remaining isolated. If half-tones do not appear, the developer may be poured off and a fresh, dilute developer applied, the plate being rinsed first. Of course, the film has absorbed a considerable quantity of the original restrained developer, and some time will be required to overcome its effect. In some cases the plate may be soaked in dilute alkali, the soda solution being diluted to half its strength if the developer is made up on the equal parts of A and B system.

For dealing with over-exposure possibilities hydroquinone is an excellent developer. It has a natural tendency to give strong results. Further, it is exceedingly difficult to wash it out of a gelatine film, and washing under a running tap only removes the developer from the upper layer of the film. If we could remove the upper surface of an over-exposed plate we should get over the trouble over-exposure brings. When developing with hydroquinone we do not, of course, do this, but we produce to some extent a similar result, for if we find our plate showing signs of over-exposure we may, by washing under the tap, remove the developer from the over-exposed upper layer, while allowing it to remain in the less fully exposed under-strata of the film. We thus develop the properly exposed under-layers and stop development in the over-exposed upper or surface layer. Here again it is well to stop developing as soon as the shadows are just greyed over, and to get sufficient printing strength by intensification. Such a method as chromium intensification enables us to build up a thin and delicate image to full printing strength by repeated applications if need be.

We must now pass on to consider what control may be exercised when we are able to adjust exposure with development control in view. Here we are guided by the main principle that increase of exposure and decrease of development produce softness, while shortening exposure and prolonging development give greater contrast. In any case, we vary the steepness of gradation over the whole scale of tones. That is, we cannot keep a steep scale in the high-lights and a shallow scale in the shadow tones. This fact often gives rise to disappointment when a negative is to be reproduced in order, let us say, to soften the contrast. Imagine a view with near pine trees and in the distance some snowclad peaks sparkling in the sunshine. It might be that we have a well-exposed but somewhat fully developed negative of such a subject, the negative showing gradation everywhere. When we attempt to print it, however, we find that our printing paper will only record some section of the scale of gradation. That is, when the shadows are the right depth, the high-lights have not printed up; and if we go on till the high-light gradation is recorded the shadows are clogged up. We say in such a case that the negative is over-developed, or is too strong, or that it is "hard." Now suppose that we make a transparency and a new negative and lessen the contrast in doing so. We shall find that, though we may be able to print the full scale, the gradation in certain important portions of the scale will be so softened that the essential effect may be lost. In our supposed object, for example,

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we should probably find that the distant snows would have lost the brilliance of gradation necessary to give sparkle. Pure photographic treatment fails in such a case as this, and we must, in the majority of cases, rely on hand treatment.

Harking back a moment, we may consider the principle of more exposure and less development for giving softness, and *vice versa*. It may be suggested that as there is nothing on the plate when we commence development, all we need do is to shorten development in order to get the desired degree of softness. Now certain developers work in one way and others in another. Take metol, for instance, as typical of the developers which bring out practically all detail within a few seconds of the pouring on of the solution. Obviously, with such a developer all we need do is to adjust the duration of development so as to give us the contrast required. On the other hand, with pyro-soda we may find that it is forty-five or sixty seconds before the high-lights are well out, and perhaps a couple of minutes before shadow detail appears. So that with pyro-soda we must develop a normal exposure a certain length of time in order to get shadow detail. If, then, we wish to curtail development so as to obtain softness of contrast we must so expose that we shall get shadow detail very readily and during the early stages. When working with pyro-ammonia and adding the ammonia a little at a time, as was often done in tentative development by the early workers, the aim was simultaneously to obtain sufficient detail in the shadows and sufficient density in the high-lights. If the worker found his high-lights almost dense enough and the shadows still somewhat thin he would add all at once the remaining portion of the ammonia, so as to bring up the detail with a rush. There is no doubt that greater control may be exercised with pyro-ammonia than with any other developer, for this reason; but it is not every modern plate that will work well with ammonia.

When we come to the control which may be exercised in development following control in choice of a plate and in exposure, we find our powers very considerably extended. We have suggested that longer exposure and shorter development will give softness, and this applies practically to any plate we may use, whether rapid or very slow. It is not so easy, however, to obtain the converse, the increase of contrast by the shortening of exposure, and lengthening of development, particularly with plates of any considerable degree of speed. We are therefore almost compelled to select a very slow, hard-working plate for those cases when we wish to increase contrast materially. Good examples of the type of subject where this is required are to be found in technical outdoor work in a very dull, flat light or in copying a very flat, weak original. Having chosen the suitable plate, in extreme cases a process plate, we must take care not to expose too fully, yet at the same time we must expose long enough to get plenty of light-action in the high-lights. It is not sufficiently realized by many workers that *density* depends to a great extent on exposure. If our high-lights have had insufficient exposure, no prolongation of development will give us a strong negative. But given this ample exposure, we shall possibly develop a strong negative, and certainly a thick negative. If the latter, the thickness may be lessened and the contrast increased by the use of the hypo and ferricyanide reducer.—*British Journal of Photography.*

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LEAVES FROM MY NOTE BOOK

By an Old Hand

THE SAVING OF RESIDUES

EVERY photographer should save his residues, as it is possible, if any considerable amount of work is done, to obtain quite a decent sum in the course of a year. Particularly is this the case when amateur finishing is part of the business.

Every piece of waste paper and film should be preserved. I have in my dark-room an empty hypo keg, and into this is thrown every bit of waste and spoilt film negative, and I find that my amateur customers are quite willing in nine cases out of ten to leave their spoilt films behind. When the keg gets full the contents are jammed down with a stick till it is no longer possible to put more in, and then the keg is taken out into the backyard and the contents dumped into a homemade combustion chamber. This was made out of corrugated iron with a stout sheet-iron bottom and another sheet for a lid.

At one side near the bottom is cut a small door, which allows me to fire the mass, and I take good care to collect a few films and place just inside this door. The waste is not tightly packed, merely lightly dumped in, the lid put on, and then a match applied to the films. These burn fairly rapidly and soon set fire to the lot, and it is allowed to burn itself out, with an occasional stir with a poker. The ashes are not disturbed till possibly the next day, when everything has cooled down. They are then carefully collected and packed tightly into an empty wooden plate case, which is kept till full.

Naturally the chief source of residues is the fixing bath, whether for plates or paper, though the latter has much less silver in it than the former. To collect the residues, an empty oil barrel is used, with the head knocked out, and this has its permanent place in the yard. When a fixing bath gets too dirty it is poured into a pitcher and emptied into the barrel and no attempt is made to precipitate the silver till the barrel is half full.

There are several methods of throwing down the silver, and the one I always used, till the war broke out, was with scrap zinc, which was obtained from a local zinc-worker, who was glad to let me have all his scrap at a nominal price; but since the war he has been able to get a better price for it. I have now reverted to the old liver of sulphur. This is not quite so cleanly, nor as economical really, because with zinc one obtains metallic silver, whereas, with liver, silver sulphide is thrown down.

I buy the cheap variety of liver, as it is just as good for this purpose as the purer kind which is double the price. A wide-mouthed bottle is used. As a matter of fact I obtained from a nearby soda fountain some quart fruit-jars with glass lids, and the liver is turned into these, a pound to the bottle, and then filled up with warm water and the whole left with an occasional stir till the lumps dissolve. The strength of the solution is of no moment, only the less water used the less there is to get rid of later. These bottles are kept out in the yard also, as liver is not nice stuff to have in the dark-room. If sulphide toning is resorted to, then the used sulphide solution is also dumped into the barrel.

When I want to throw down the silver, about a pint of the strong liver solution is stirred into the barrel and the whole left till the next day, when it will generally be found that the upper portion of the liquid will be clear and more or less white. A little is then dipped out with a teacup and a drop or two of strong liver solution dropped into it. If the solution remains clear on stirring, then I know that all the silver is down; but if there is any sign of a precipitate more liver solution is added, the whole well stirred up, and the barrel left till the next day and a further test made.

As soon as all the silver is proved to be thrown down the barrel is allowed to stand, without being disturbed, for two or three days or a week, and then the clear solution baled out with a tin dipper and thrown down the drain. This naturally makes room for more fixing-bath, and thus it really takes quite a while to get the barrel full. Actually I have two barrels in use.

The silver, which is precipitated as sulphide, is then scooped out as a thick liquid and put into cheap enamelled-iron pans and placed in the cellar till most of the water has evaporated. In the winter this is easy, as the pans are put on the top of the furnace and left there till quite dry, then the sulphide is broken out and packed up with the ashes of the papers and films and sent off to the refiners.

Formerly I used old barrels, and when they are full of the silver sludge I bung up the hole tight and send off to the refiners, but I found the freight charges were too heavy and so I determined not to send more water than was actually necessary. There is just one point, and that is, in declaring the contents to the railway company, make sure to say that it is silver residues; if you do not and any loss is sustained you cannot get compensation.

All this may seem a lot of trouble, but the actual work is very little and can be done in any odd moment, and if you are doing anything like a decent business the monetary return will make quite a nice showing. At any rate, mine last year ran well up into three figures.

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ABSTRACTS AND TRANSLATIONS

BY E. J. WALL, F.R.P.S.

Permanganate—Persulphate Reducer

N. C. Deck points out that a reducer that will act proportionately and which is under full control and is not erratic in its action has long been looked for by photographers. The persulphate reducer is occasionally erratic. Namias' permanganate reducer is very valuable, but when considerable reduction is required there is a tendency to eat out the more delicate detail. The best formula for this is:

Potass. permanganate 1 per cent. sol.	50 c.c.
Sulphuric acid, 10 per cent. sol.	25 gm.
Water to	1000 c.c.

The exact time to remove the negative is not always a matter of certainty, as the image may be clouded with a brown stain which dissolves in a 1 per cent. potassium metabisulphite.

By combining these two reducers the disadvantages of each disappear and the mixture acts proportionately; that is to say, suppose a negative is overdeveloped, then by reduction in the following solution a result is obtained which, as far as the eye can see, is the same as if development had been stopped at the right stage:

Potassium permanganate	20 c.c.
Ammonium persulphate	10 gm.
Water to	1000 c.c.

This should be mixed just before use.

The advantage of the reducer are that the action starts right away, and is quite regular; it is not sensitive to small traces of hypo; a hardening bath has no effect on its action except making it a little slower; it shows no erratic action, the degree of reduction can be easily watched, and it appears to keep longer.—*Austral. Phot. Review.*

Saving Metabisulphite

T. H. Greenall suggests the use of acidified sodium sulphite instead of potassium metabisulphite, as the price of the latter has gone up. His formula is:

Sulphuric acid 10 per cent. sol.	40 c.c.
Water to	1000 c.c.
Sodium sulphite anhyd.	130 gm.

Add the acid to about three-fourths of the water, then add the sulphite, shake till dissolved, and make up to bulk with water.—*Phot.*, 1916, p. 40.

This seems rather a roundabout way to obtain a result which can more easily be obtained by the use of commercial solution of sodium bisulphite solution, which is cheap, as it is much used in the dyeing industry. This solution is actually one of acid sodium sulphite and it contains 20 per cent. of sulphurous anhydride, SO_2, therefore about 50 per cent. more will replace the much more expensive metabisulphite. I have used this exclusively for the last six years for acidifying sulphite solution and the fixing bath.

Printing Methods

A Test for Washing Prints. Dr. H. D'Arcy Power refers to the practical use which can be made of the following method of testing the progress of removing hypo when washing prints: The whole batch of prints is fixed in the usual hypo bath, to which has been added $\frac{1}{10}$th of 1 per cent. of eosine, equal to about 8 grs. of eosine in 100 ozs. of bath. This gives the prints a slightly red color, which will be quite washed out on treatment with water. The usefulness of the test lies in the fact that it affords an indication of defective washing due to prints lying one on the other, and so preventing the proper access of the wash-water.—*Cam. Craft.*

Washing Post-cards. F. Newell gives the following description of the method used by him for washing large batches (600 to 1000) post-cards: "I use large domestic baths with a net stretched over a stout wire ring fitted about 4 ins. from bottom. The water is running throughout the toning, and each card as toned is thrown under the tap, which rinses off all adhering solution.

"I tone fifty to seventy at a time, and I turn over the cards in the baths thoroughly every ten minutes or so. When about 300 are in one bath I put a syphon on to bath No. 2, and so on. By the time I have filled bath No. 3 the cards in No. 1 are nearly ready to come out. I squeegee and place on special racks to dry, and flatten by pressure afterward. On an average four hours is amply sufficient for handling and finishing 600 cards. I have had little trouble in obtaining permanency sufficient for commercial purposes. In using combined baths, it is essential that two deep dishes should be used for quantities, passing cards rapidly from one to the other. Over-toning can then easily be checked."—*British Journal of Photography.*

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The Opening of the Season

There is every indication that the season now opening will be one of the most profitable we have known in many years. The wave of prosperity which has swept over the country seems to have almost reached its highest point. There is work everywhere and money in everybody's pocket. The photographer in the small town has this year an equal chance with the man in the big city. What are you going to do in order to take the best advantage of the favorable conditions?

Business follows enterprise. The man who can make good work only needs to make it known in order to secure orders. The man who can introduce a new specialty, something made more desirable by its novelty, needs only to give the specialty publicity, and his reward is sure. The public has the wherewithal, and is willing to spend after several seasons of enforced economy.

What do we mean by enterprise? Chiefly a vigorous scheme of advertisement, intelligently planned and carried through, by local paper, booklet, announcement, exhibitions at the gallery, receptions, and the like. Put the most promising method into active use. But be sure, to begin with, that your place of business is well dressed and attractive within and without. *Look* prosperous; think and talk prosperity.

Wireless Photography

A very good summary of what experimenters in radio-photography have learned and accomplished is set forth by Marcus J. Martin, an English scientist, in *Wireless Transmission of Photographs*. The book is well illustrated with drawings and photographs. (Marconi Publishing Corporation.)

Photographs on Living Leaves

An Austrian investigator, H. Molisch (according to the *Pharmaceutical Journal*), attached some sharply defined negatives to the peltate leaves of the common "garden nasturtium," *Tropæolum majus*, and exposed them to direct sunlight for a day. In the evening the leaves were cut off and treated with Sach's iodine reagent. The positive of the negative was thus developed on the leaf. The image was so sharply defined that individuals could be easily recognized in the case of photographs of persons, and it was possible to preserve these prints. This experiment proves that the formation of starch varies in the most sensitive manner with the intensity of the light. The author did not attempt the further experiment of using a leaf as a photographic plate in the camera, and thus producing a negative directly on the leaf.

Kosmos-Vitegas Developer

Messrs. Kosmos Photographics, Limited, have just published a developer formula for their "Vitegas" paper, designed to avoid unnecessary cost of developing chemicals while sacrificing nothing in the quality of prints. The formula is:

Water	100 oz.
Metol, scalol or other efficient metol substitute	20 gr.
Hydroquinone	60 gr.
Soda sulphite	¾ oz.
Soda carbonate	1 oz. 3 dr.

Prints should be given a little more exposure than required for the Vitegas No. 1 developer. The new formula yields prints of full intensity and fine warm-black tone in two minutes.

Photographs in Relief

In 1899 Andresen pointed out the property possessed by hydrogen peroxide of dissolving both the reduced silver and the gelatin substratum of a photographic plate. This effect, however, sometimes took place very slowly, even with very concentrated hydrogen peroxide, fifteen to twenty-four hours being required. E. Constet has demonstrated that the action may be made to take place in a few minutes if several drops of acetic acid are added to the peroxide bath, or if the bath is composed of water, 100 c.c.; hydrochloric acid, 10 c.c.; barium dioxide, 4 gms. The dissolution of the image takes place in a selective manner, the dense parts of the image being more readily attacked than those containing a proportion of the unreduced salts. This action results in the formation of an image in relief inversely proportional to the opacity of the metallic deposit. Another bath for producing this effect

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has been patented by Belin and Droillard, consisting of hydrogen peroxide to which are added nitric acid, sulphate of copper, and bromide of potassium (French patent No. 423,150).

If the negative has not been previously fixed in hyposulphite, a positive image is obtained, the differences of shade being represented by varying thicknesses of unattacked gelatino-bromide of silver. By simple absorption of aniline colors the positive image may be made to assume any tint. The thick parts of the gelatin relief absorb a relatively considerable quantity of the coloring matter, and the thin parts proportionately less. Prints on paper can be obtained from such a colored relief plate while damp by simple contact. To this end, a paper coated with a thin layer of hard gelatin is employed; for example, that known as *simple transfer* in the carbon process. Two or three prints may be so obtained from one soaking in the color bath, after which the plate must be returned to the bath for an additional supply of color. Photo-printing plates may also be made from the relief by the stereotype process.—*Revue Generale des Sciences.*

The Optical Society of America

At the recent regular election of the newly organized optical society, the name Optical Society of America was chosen. The officers chosen for the year are: P. G. Nutting, president; G. E. Hale, vice-president; Adolph Lomb, treasurer; F. E. Ross, secretary. The executive council consists of the above officers and F. E. Wright, C. E. K. Mees, Norman Macbeth, and J. P. C. Southall. The charter members of the society are: Mr. Adelbert Ames, Jr., research, Clark University; Mr. Edward Bausch, member Bausch & Lomb Optical Co.; Dr. E. J. Bissell, research ophthalmologist; Dr. Wm. Churchill, Corning Glass Co.; Professor Louis Derr, professor of physics, M. I. T.; Dr. Marshall D. Ewell, consulting optical engineer; Professor C. W. Frederick, chief, lens designing and testing, E. K. Co.; Dr. H. P. Gage, optical research and design, Corning Glass Co.; Dr. G. E. Hale, director, Solar Observatory, Mt. Wilson; Dr. E. P. Hyde, director, Nela Research Laboratory; Dr. H. E. Ives, optical research, U. G. I. Co.; Mr. L. A. Jones, optical research, E. K. Co.; Dr. H. Kellner, chief, scientific bureau, B. & L. Co.; Mr. C. H. Kerr, director, research laboratory P. P. Glass Co.; Dr. Walter B. Lancaster, research opthalmologist; Mr. Adolph Lomb, member Bausch & Lomb Optical Co.; Mr. Norman Macbeth, editor and proprietor, *The Lighting Journal;* Dr. C. E. K. Mees, director, research laboratory, E. K. Co.; Professor H. D. Minchin, professor optics, U. of R., Dr. P. G. Nutting, optical engineer, E. K. Co.; Dr. C. F. Prentice, professor of optometry, Columbia; Mr. I. G. Priest, associate physicist, optics division, Bureau of Standards, Mr. W. B. Rayton, optical design and testing, B. & L. Co.; Professor F. K. Richtmyer, professor of physics, Cornell University; Dr. F. E. Ross, astronomer and optical designer, E. K. Co.; Mr. F. B. Saegmuller, superintendent, precision optics, B. & L. Co.; Professor J. P. C. Southall, professor in charge of optometry courses, Columbia University; Mr. E. D. Tillyer, research laboratory Am. Optical Co.; Professor E. J. Wall, professor of photography, Syracuse University; Dr. F. E. Wright, optical research, geophysical laboratory (30).

The constitution provides that only those who have contributed materially to the advancement of optics shall be eligible to regular membership in the society and hence to vote or hold office. Any one interested in optics is eligible to associate membership. The affairs of the society are in the hands of the executive council. It is planned to hold one or more annual meetings and publish a journal commencing with the year 1917. Blank application for membership may be obtained from the secretary, 1447 St. Paul Street, Rochester, N. Y. Material intended for publication in the journal should be addressed to the president until the editorial staff has been selected by the council.

Photography a Feature of Coming Electrical Exposition

For a number of years past the annual Electrical Exposition held in New York City, marked the progress of electricity in its relationship to the photographic industry. Through the comprehensive exhibit of The New York Edison Company this year, Mr. John E. Garabrant, director of The New York Edison Company's photographic studios, is preparing an exhibit of unusual merit. It will consist chiefly of a model electric studio and dark-room, in which the public will be able to see the complete operation of developing and printing. Every process will be done to the entire exclusion of daylight, thereby proving that daylight is absolutely unnecessary.

This exhibition will take place at Grand Central Palace in New York City from October 11th to the 21st.

New Bargain Catalogue

The New York Camera Exchange, 109 Fulton Street, New York, have just issued their new bargain list No. 20 of cameras and lenses at prices below the regular. They also carry a full line of all developing and self-toning papers which are sold at lowest prices, together with everything manufactured in the photographic line. It will pay you to send for a copy of this bargain list.

Hicrography: Direct Color "on Paper"

Hicrography is the art of making color photographs, or "Hicromes," by a process and apparatus developed by Mr. F. E. Ives, and placed upon the market by the Hess-Ives Corporation; hence the prefix HI from the initials of Hess-Ives.

A single plate-holder, exactly like the ordinary black-and-white plate-holder, carries the "Hipack," which consists of three plates. When the slide is withdrawn the three plates act as a single unit, so far as the operator is concerned, and are ready for exposure in the ordinary way by pressing the bulb.

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Color screens, which are colored glass plates, and a reflector are so arranged within the camera that one negative plate makes a record only of the blue rays, another of the green, and the third of the red rays. In this way each plate represents a color record of one of the three primary colors.

These three plates are simultaneously developed in a special rack and tank. When developed the three plates are cleared in hypo in exactly the same way as any ordinary plate. The development is entirely by time. This again insures absolutely uniform development for all three plates.

The developed and dried plates are placed in a printing frame long enough to take the three. A piece of special film is placed over the three plates. They are then printed-out together by exposure to daylight or a powerful arc-lamp.

When printing-out is completed, which can be determined by the aid of a small instrument, the "Hicrometer," that we supply, the sheet of film is first developed by immersion in hot water until the highlights show clear. It is then cleared of all the silver salts in a hypo bath in the usual manner. The film is then cut into three equal parts corresponding to the three negatives; one part is placed in a yellow dyebath, one in a magenta, and the third in a blue bath; they will be correctly dyed in ten minutes, but as prolonged immersion will do no harm, this dyeing requires no skill. The dyes will be furnished.

The blue film is squeegeed onto a piece of white paper, which is furnished. The other two films are now allowed to dry.

The backed blue film is placed flat on a piece of glass or any other convenient stiff or flat carrier, and the red print placed on this in such way that some prominent detail in one corner is in registry; the opposite corner is then brought to registry, when it will be found that a very little additional movement will give registry over the whole surface. An ordinary paper clip then serves to clamp the two sheets together. They are permanently fixed by pasting a strip of gummed (passe-partout) paper along one edge. The yellow film is now similarly brought into registry, and attached at the same edge to the other two. The whole is now laid in a tank containing amyl acetate, the leaves slightly separated at one end to allow this to pass between them. After a few moments the three leaves are taken out, placed between a couple of sheets of blotting paper, and a squeegee roller passed over them. (A good clothes-wringer makes a very satisfactory squeegee.) The result is a completed "Hicrome," which can now be trimmed and mounted in any manner desired.

It is evident that the operations themselves are as simple as those required for ordinary black-and-white printing, though the number of steps is greater.

The result will, as in all photographic processes, depend upon the character of the original exposure. The time of exposure is longer than that for ordinary black-and-white photography by about twenty times; in bright sunlight, about midday, an exposure of half a second will suffice, and this will increase, depending upon the character of the light, to five seconds. Interior exposures in a studio will require from two seconds upward.

For duplicate prints return to the original negatives and print out on three new pieces of film.

For transparencies the three pieces of film are mounted between cover glasses, as usual.

The camera can be used for ordinary plate or film-pack exposures. Plate-holders and film-pack adapters in all sizes are furnished. For further information write Hess-Ives Corporation, 1201 Race Street, Philadelphia, Pa.

The Popular Exhibition of Photographs at Wanamaker's, Philadelphia, November 1 to 18, 1916

The second popular exhibition of photographs will be held in the Wanamaker store, Philadelphia, November 1 to 18, 1916. Entries close October 21, 1916.

The first prize will be $25 in cash; the second prize will be $15 in cash; the third prize will be $10 in cash; and ten prizes of $3 each, besides honorable mention for as many pictures as the judges find worthy.

All photographs should be carefully wrapped and addressed, each marked with the name and address of the exhibitor, and delivered to the camera store by October 21, 1916. Express charges, if any, should be paid by the exhibitor.

No picture may be removed from the walls until the close of the exhibition. For further information apply to the Photographic Exhibition Bureau, Main Floor, Juniper Street, John Wanamaker, Philadelphia.

New Catalogue of Efficient Machinery for Photo-Engravers, etc.

The old reliable house of John Royle & Sons, of Paterson, N. J., have just issued a new and attractive catalogue entitled *Efficient Machinery*, in which are shown and fully described the devices this concern handles for engravers, electrotypers, printers, stamp makers, die cutters, and others.

Besides the machines there is a full-page plate showing the factory of the Royle Company, and accompanying text gives a brief historical sketch of the concern and its methods.

Those interested in efficient machinery may secure copies of this catalogue by writing to the Royle company at the above address.

Our Cover Picture

Our attractive cover picture this month is by Hallie Wilson, Berlin, N. H., and is a fine example of an unusual and very difficult treatment of a child's head close up. Miss Wilson's work shows distinction which is the result of careful study and thought.

The National Convention at Cleveland

The thirty-sixth annual convention of the Photographers' Association of America was held July 24–29 at Cleveland. The attendance was about 1150, including members, manufacturers,

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and dealers, although 2040 had paid their dues up to July 15, and about 800 memberships (active and associate).

Fully 5000 pictures were on exhibition from 239 exhibitors, the National Salon, New England Salon, Middle Atlantic States Salon, ex-presidents' exhibits, several not catalogued exhibits, 600 by the United States Government and about 2500 shown by the manufacturers and dealers.

Salon honors were given to the following fifteen exhibitors: H. Lee Bell, Pensacola, Fla.; I. Buxbaum, Brooklyn, N. Y.; Pasquale S. Culotta, Baltimore, Md.; E. E. Doty, Battle Creek, Mich.; Dudley Hoyt, New York City; F. S. Jacks, Muskegon, Mich.; Geo. J. Kossuth, Wheeling, W. Va.; H. C. Mann, Norfolk, Va.; James W. Porter, Youngstown, Ohio; Jane Reece, Dayton, Ohio; C. R. Reeves, Anderson, Ind.; May L. Smith, Binghampton, N. Y.; Strickler Studio, Pittsburgh, Pa.; A. O. Titus, Buffalo, N. Y.; Edward H. Weston, Tropico, Cal.

The officers for 1917 are as follows: Ryland W. Phillips, Philadelphia, president; Charles L. Lewis, Toledo, O., first vice-president; Howard D. Beach, Buffalo, N. Y., second vice-president; G. L. Hostetler, Des Moines, Ia., treasurer; John I. Hoffman, Washington, D. C., secretary.

R. W. Holsinger, the treasurer, owing to his health, was compelled to decline renomination.

As Peoria, Ill., was the only city bidding for the 1917 Convention, it was decided to allow the incoming Board of Officers to make the selection of the city offering the best inducements for the Convention.

Report of the Congress of Photography

At the first two meetings of the Congress the entire business consisted in the roll-call and appointment and seating of delegates.

The various suggestions contained in the President's address were next taken up by the Chairman of the Ways and Means Committee, and were acted upon as follows:

The matter of changing the plan of selecting officers and having the report of the nominating committee presented at a meeting preceding the election of officers was decided, on motion, to be desirable.

The matter of securing the services of an Association attorney was next taken up, and after much discussion it was ordered that a committee, consisting of the incoming secretary, president and vice-presidents, communicate with the Copyright League and ascertain if they will come in the Association; if not, that a sum not to exceed five hundred dollars be expended in establishing a legal department in the P. A. of A., to give legal advice to members on all questions pertaining to the photographic business and to look after the copyright business for the members.

The matter of opening the doors to the public is left to the Board to handle as they see fit.

The matter of standing committees being composed of members closely situated geographically to each other was left to the Board.

The matter of the official year commencing October 1 was then discussed; a resolution was introduced, and after due notice passed, amending the constitution by changing the time of the date of the newly-elected officers assuming their duties from October 1 to January 1.

A resolution was passed that photographers having no amalgamated body in their own State may join and become active members of amalgamated bodies in the nearest State having one.

A motion was passed that where amalgamated bodies desire the attendance of the secretary they could have same by paying half of his expenses.

Be it Resolved, That the Executive Board be instructed to invite each amalgamated section to send a delegate to the annual Board meeting of the P. A. of A., and that the delegate be the president of each amalgamated society. Adopted.

Resolved, That the Executive Board be given the authority to suspend for a term of years, or expel, in the discretion of the Board, any member who deliberately advertises honors which he has not received and refuses to make correction of such misstatement when asked to do so. Adopted.

In reference to the matter of photographers who make a practice of not paying their bills and of defrauding those who sell them supplies, as set forth in the President's address, the Congress accepted the recommendation that Secretary Hoffman be instructed to investigate this matter, and if enough of the manufacturers and dealers encourage the plan, and will cooperate with him to make it a success, he be authorized to establish a financial rating system service, and to let it be known that where a membership card in the P. A. of A. is displayed, that man's credit is O. K.

The secretary brought up the matter of arranging with the various magazines and papers of the country to furnish them with a list of the members of the P. A. of A., in order that when they wished photographs of any person or event in any part of the country for publication, they may communicate with and obtain the services of one of the members in that particular locality.

A motion was carried that the secretary prepare and furnish such list of the members to the magazines and journals that use photographs for illustrations—the members to be informed of the prices that the different publications pay.

An application for a charter was received from the Ohio-Michigan Photographers' Association. The matter was laid on the table until next year.

A charter was granted to the Photographers' Association of New England.

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THE WORKROOM

By the Head Operator



OPERATING HINTS
HOW TO MAKE DUPLICATE NEGATIVES DIRECT
HINTS FOR THE DARK-ROOM
THE QUALITY OF PORTRAIT NEGATIVES
A COMBINED PERMANGANATE-PERSULPHATE REDUCER FOR NEGATIVES
DEVELOPERS FOR NEGATIVES
PYRO-STAINED NEGATIVES
STRIPPING FILMS FROM GLASS NEGATIVES
PRINTING GASLIGHT PAPERS AND POST-CARDS BY DAYLIGHT
FINE FOCUSSING SCREENS
HAND-COLORING IN PHOTOGRAPHY
COLOR PRINTS ON PAPER
SYSTEM IN EXPERIMENTAL WORK
THE BLACKENING OF BRASS BY AMMONIACAL CARBONATE SOLUTIONS
SAFE LIGHTS FOR BROMIDE PAPER
FERROCYANIDE IN THE HYDROQUINONE DEVELOPER
DEVELOPERS FOR NEGATIVES
THE VALUE OF THE SWING FRONT
PHOTOGRAPHING SMALL NATURAL HISTORY SPECIMENS
RED INK FOR DIAGRAMS
SQUEEGEED PRINTS
FOR WASHING PRINTS
RETOUCHING PINHOLES ON NEGATIVES
LABELS FOR GLASS BOTTLES
CHILD PORTRAITURE
FINE GROUND-GLASS SCREENS

OPERATING HINTS

THE two chief assets in successful operating are perfect self-confidence and untiring patience. No matter how nervous, shaky, and uncomfortable you may feel while taking your first sitters, never let even the faintest trace of such feelings be visible, for there is a certain telepathic sympathy between sitter and operator which will at once give you away to the sitter, and the result will be some kind of strained, unnatural expression, very unlike the sitter's usual look. Particularly is this so with children and nervous persons. It is very necessary to keep the camera and all about it in perfect working order, for any slight jar in its working will cause a tyro much fluster and worry. Even the faintest hitch in the working of shutter, bulb, or slides should be looked to at once on the departure of the sitter, so that it may be in perfect working order for the next.

If you study the work of two studios, one very high-class and one quite medium, you will often be impressed by the fact that technically the work of one may be every whit as good as the other. Wherein does the difference lie, then? Usually in the posing. Certainly the sitters that go to a high-class studio are easier to pose, and their clothing and dresses lend themselves better to good work, but if operators would only strive harder to get the very best possible result out of each sitter, the general standard of work in this country would improve by leaps and bounds; neither would operators find their task so monotonous.

Just at present, however, a great many operators are in the position of having to learn their work as they do it, by failures and heartburnings, and to such I would like to offer a few suggestions.

Unless your camera has some kind of mask inside, it is very useful to cut out masks in brown paper, which you can lay over the focussing glass, so that you may see only just what you are taking. This is often a great help, as cutting off some portions often spoils the balance of an otherwise good pose; and also it will tell you if you are getting your figures too large or too small. Also, get into the habit of studying the whole of the figure; don't pose and focus for the head and shoulders alone, and leave the rest to take care of itself. If the lower part is not sharp, use your swing back; get all evenly soft, and then sharpen up with the rack-and-pinion screw.

In dealing with groups, should your lens be of short focus, as a great many of the modern large-aperture lenses are, always keep your figures in groups, etc., as close together as possible. Don't let the back ones be several feet behind the others, or it will be next to impossible to get them sharp. For such things it is generally better to use a smaller stop, lengthen the exposure as much as you dare, if there are children, and then trust to forcing a little in development.

Many young operators from time to time get worried by the difficulty of thinking out fresh poses. Here are two little things that help. One is to notice the attitudes that people fall into of their own accord, when quite away from the studio, and to notice just what it is that makes one person's attitude ugly while another's is graceful. The knowing what to avoid is a great thing, almost as important as knowing what to strive for. This is the habit artists acquire, and the reason for many of those quick sketches found in an artist's notebook.

Another thing that is useful is to make a small collection of postcards of actors, actresses, and celebrities. Usually these postcards are made from negatives taken by quite good firms, and often the posing and lighting are excellent. Study them very carefully. I do not mean that you should copy the poses exactly, but that you should try and get quite fresh ideas of how things *can* be done and of how backgrounds and accessories *may* be utilized.

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Then also a few minutes in the magazine room of a public library are often useful. There you have the work of some of the finest studios in the land.

The thing that matters most is to notice the *lines* and sweep of figures and draperies. You may not know exactly by what means they are produced, but keep on trying until you hit upon a way of your own, for in this case the end quite justifies the means.

Children, of course, are always a trial to one's patience, but I think most operators would agree with me when I say that the quieter children are kept the better if they are inclined to be restless. If once you can get them interested in you and your movements you will get a far happier and more natural expression. To this end it is often of more advantage to talk to mothers and nurses than to the children, for then the child receives less admonition to "sit still," "be good," "smile," and so on; and if you can get an exposure or two without the parents being aware of it, so much the better. A toy that seems both to amuse and keep a child still is one of those bladders with arms and legs and a funny face painted on it. The child will keep as still as a mouse while you are blowing it out, and also you will get a quite interested expression. They are sold at most toyshops. A clockwork tumbling toy is also very useful to take the child's mind off what you are doing.

The differences between good and bad posing lie more in little things than in big ones, and nothing is so small that you can afford to overlook it. An hour or two spent in practice upon one of your apprentices will be of great value, though you need not necessarily make exposures. Spend it in finding out what not to do, what to do, and the best way in which to do it. Strive to feel quite at home with your camera, so that you know all its little tricks and its limitations. There are some things it is useless to expect your camera and lens to do, and it is well to know what these things are.

Don't be above learning from your sitters, either. You will sometimes glean very useful bits of information from the conversation of a sitter and his or her friends, for they see things from a very different point of view from the photographer, and it is a great help to know what appeals to your sitters most.

Lighting, too, calls for much care, practice, and attention, for poor lighting will mar and spoil good posing.—*British Journal of Photography.*

How to Make Duplicate Negatives Direct

After a long series of trials, including all the known methods for making direct duplicate negatives (without the use of diapositives), I have settled down on that of two exposures as the best. By this method, known in principle for some time past, a positive is first made on a bromide of silver gelatin plate, then obliterated by chemical action and the remaining intact bromide of silver, after a second exposure, developed into a negative. Some 200 faultless duplicate negatives, made by me in this way, justify my assertion that by following exactly my directions any man may obtain good results.

The positive is best made in the camera. The exposure must be full, so that the light may penetrate well into the bromide of silver film.

A hydroquinone developer with plenty of bromide is used:

Water	1000 parts
Sulphite of soda . . .	250 "
Hydroquinone	20 "

For use take:

75 parts of above stock solution.
75 parts of water.
50 parts of a 25 per cent. solution of carbonate of soda.
20 parts of a 10 per cent. solution of bromide of potassium.
50 parts of 90 per cent. alcohol.

Development should be very slow (dish covered), so that the result may be a brilliant positive of pure whites and deep blacks. Development must be continued until the deepest blacks have fully penetrated the film and the picture is plainly to be seen on the reverse side. This kind of development is the chief condition of success. After development wash thoroughly to remove all traces of developer.

The second exposure is now to be made. The plate is placed upon a mat black support (black paper, ebonite, etc.), a black mask is applied to prevent the entering of light through the glass edges, and the plate exposed by diffused open light for from ten to twenty seconds. The white portions of the film, originally of a greenish shade, soon become grayish. This indicates sufficient exposure, and the plate is returned to the dark-room, superficially rinsed, and placed into the following bath:

Water	1000 parts
Bichromate of potash . .	10 "
Nitric acid	20 "

This bath, compared with other formulas for this purpose, is very weak; but as a matter of fact a very small quantity of bichromate is sufficient to oxidize the silver of which the picture consists. This bath is to act until the positive picture has completely vanished, and only the bromide of silver, destined to form the negative, is left in the film.

Let me again repeat the main requisite for success: the thorough development of the positive. If this is neglected, then the lower strata of the film will still contain unchanged bromide of silver which had not been exhausted in the formation of the positive, and which in the now following second development takes a part, forming a positive. A hybrid of a positive and a negative results. As soon as the bichromate bath has destroyed the positive picture, the plate is to be washed at once, and very thoroughly. Its surface should come as little as possible into contact with the hands, as in the following development spots and failing of the film would surely follow.

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After thorough washing the negative is to be developed in a *very* clean dish. Paramidophenol (rodinal) and hydroquinone, as used for negative development, may be applied. Before fixing the plate is bathed for five minutes in a 5 per cent. solution of chrome alum.

Hints for the Dark-room

When Pouring from a Bottle. Two last hints ought to be so borne in mind that the practice of them becomes habitual. Always keep the label uppermost when pouring from a bottle, so that if any liquid trickles down the side the label misses it. Result—your labels keep clean and legible for much longer. Secondly, if you want to deliver drops (or a very small quantity) of liquid, just moisten the lip of the bottle with the finger. The fluid then trickles out without having to overcome the resistance of a dry patch.

Using Solutions. Under this general heading I want to say some useful things about such things as adjusting temperature, rocking solutions, cleaning dishes. As the last is a necessary preliminary (frequently) we may take it first.

Cleaning Dishes. Dirt, according to the famous definition, "is matter in the wrong place," which is very true in photography, where dirt may be various in kind. I am going to name two reagents for its removal: commercial hydrochloric acid and paper. Commercial hydrochloric acid is a solvent of many precipitates, sediments, deposits, which are not removed by water, and it is pretty safe to say that what is not removed by it must be rubbed off by the second reagent. Keep the spirit mixed with an equal volume of water, and see that you do not splash any of it (neat or diluted) on clothes or upholstery, for it leaves a rotten and stained patch as a memento of its visit. Dishes, measures, etc., if rinsed out once or twice with this liquid are easily made quite clean, as a general rule. Moreover, it decomposes hypo, and thus renders innocuous, as regards subsequent use, any dish which has been used for fixing. If the dish be of porous material (*e. g.*, granatine, "porcelain"), and cracked, it is not safe to assume this, for the hypo or the acid is removed from the cracks with difficulty, though it may do so subsequently sufficiently to cause stains in, say, toning collodio-chloride prints. Moral: Keep you cracked dish, if you must keep it at all, for one particular purpose.

If the acid will not remove any stain, brisk rubbing with a tuft of any kind of paper will almost always do so. I know of no better way of cleaning right into the corners of dishes than this.

When and When Not to Filter. Do not filter if you can do anything else. It is better to let any deposit settle (if it will) and pour off the clear liquid above it. You should never filter solutions containing pyro, hydroquinone or other developers which oxidize readily, because filtration exposes the solution so freely to the air. If it is necessary to filter it should be done before the pyro, etc., is added.

The unventilated dark-room is an unhealthy one. Too many photographers still cling to the notion that any cramped little hole is "good enough." The dark-room is one of the most important rooms. It should be sufficient in size, convenient in arrangement, and *well ventilated.*

The photographer who turns out a print mounted in slovenly fashion has not a single excuse—except carelessness—to hide behind. We have noticed in several showcases—with low-priced work in them—prints trimmed with a jagged or slightly uneven edge, or not trimmed true, and uneven circles which have been first ruled with a pencil around a tea-cup and then clipped out with scissors. And they are not always mounted centrally true. Cutting shapes and cutters are cheap, and a little care does not cost a cent in hard cash.

With very old and very young people it is a fatal mistake to under-expose a negative. The negative *must* be fully exposed, and developed for softness. It will then require a minimum of retouching, and will give a maximum of satisfaction.

Bubbles during Development. Some photographers (or rather, some photographers' assistants) seem unable to get hold of the knack of immersing sheets of bromide or other development paper without being troubled with air bubbles. Unless these are burst with the finger or with a brush they show as white spots on the finished print. Especially is this the case with very rough paper. To a certain extent bubbles trouble plates, but not so much as they do papers. They may very largely be avoided by immersing the paper film-side downward in the developer; as soon as the paper is wetted it can easily and safely be turned over. The development of more than one print in one dish has a hidden danger, for in immersing a second print bubbles of air may be transferred from it to the first print—an additional reason for having the first print face downward.

It is a very good wrinkle for the dark-room, especially in the case of those unfortunate photographers who use a very dim and very ruby light, to screen the eyes from the direct light. To have the light directly before their eyes is objectionable in a double sense—first, from the danger to the eyes; and, secondly, from the retinal glare diminishing the delicacy of perspective of any object—a negative, for example—that it is desired to scrutinize. All lights in front of the face should be so screened as to be shaded from the eye while falling unchecked (of proper strength, of course) upon the developing. There are many ways of doing this; to speak of it is almost to point out the remedy. We know one photographer whose light is rather low down, and he screens by the simple plan of placing his chemical shelf just the right height to act as a screen of this kind.

Success depends more on the man than on his appliances. Here is a description of the "studio" of a well-known old-line worker in the days when photographers were nomadic. His studio, which he moved about from place to place, as suited his fancy, consisted of two pairs of blankets, stitched together end to end, forming a sheet of about 15 by 7 feet. One end was tacked to a ridge pole about 10 feet from the ground, and it descended like the roof of a tent to another pole 2 feet lower and 5 feet to the right or left, and

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from that to the ground. The hand screens were simply barrel hoops covered, some with white and some with brown paper, to which handles like broomsticks were fixed.

With such primitive appliances he seemed to have had the lighting under perfect control.

Waterproofing Blue-prints. A simple and inexpensive method of waterproofing the prints which renders them completely impervious to weather and water is given in *Mines and Minerals.* The waterproofing medium is refined paraffin, and may be applied by immersing the print in the melted wax, or more conveniently as follows: Immerse in melted paraffin until saturated a number of pieces of an absorbent cloth a foot or more square, and when withdrawn and cooled they are ready for use at any time. To apply to a blueprint, spread one of the saturated cloths on a smooth surface, place the dry print on it with a second waxed cloth on top, and iron with a moderately hot flat-iron. The paper immediately absorbs paraffin until saturated and becomes translucent and high waterproofed. The lines of the print are intensified by the process, and there is no shrinking or distortion. As the wax is withdrawn from the cloths, more can be added by melting small pieces directly under the hot iron. By immersing the print in a bath of melted paraffin the process is hastened, but the ironing is necessary to remove the surplus wax from the surface, unless the paper is to be directly exposed to the weather and not to be handled. The irons can be heated in most offices by gas or over a lamp, and a supply of saturated cloths obviates the necessity of the bath. This process, which was originally applied to the blueprints, to be carried by the engineer corps in wet mines, is equally applicable to any kind of paper, and is convenient for waterproofing typewritten or other notices to be posted up and exposed to the weather.

The Quality of Portrait Negatives

It is not easy even if it be possible to define goodness of quality in a negative in general terms. The nearest one can get to it is a negative which gives the result, when printed, which was hoped for at the time of exposure. And unless one is very easily satisfied few exposures realize this ideal. The old writers on photography used to tell us that the perfect negative had a few very small areas of clear glass to represent the deepest shadows, a long range of half-tones, and at the other end of the scale a few small patches of almost complete opacity. While it must be conceded that such a negative would be satisfactory for some conditions of lighting and some classes of subject, it would be far too brilliant for modern taste, which usually demands a lower tone and fewer gradations. Were our ideals usually realized there would be scant work for the retoucher, for he would only be needed for what we may call premeditated mendacity in the form of altered outlines and the rectification of unsymmetrical features. Failures connected with posing do not come within our scope, but it is very easy to go wrong without knowing it in the matter of lighting the model, or perhaps we may say more accurately in correctly adjusting the length of exposure to the style of lighting which is being used. It should always be remembered that the impression made upon the eye is not at all on the same scale as that made upon the sensitive plate. The eye takes in the figure in detail, and can dwell upon shadow detail without losing or flattening the gradations in the high-lights, but the plate cannot do this, consequently it is necessary even for brilliant effects to subdue the lighting slightly and to be careful to keep the exposure within certain rather narrow limits. Exposures shorter or longer may give pleasing results, but these can only be regarded as flukes and comparative failures when judged by the original intention. It is easy when working one style of lighting to get correct exposures, but when striving for novel effects a better average of results would often be obtained were the artist to give a series of different exposures with the same lighting and pose rather than give a uniform exposure to a variety of arrangements.

Next to correct exposure and almost of equal importance comes correct development as a factor in negative production. Nothing has spoiled so many promising exposures as attempts to control development, and for that reason we strongly recommend the adoption, in some form, of factorial development and the rejection of the older way of controlling the production of the image by inspection. If a proper system of development with uniform solutions be adhered to it is easy to tell whether exposure or lighting is at fault, but with a haphazard "that'll-do-now" style of working we introduce another element of uncertainty. It requires a certain amount of courage to stop the development of a strongly lighted subject while there are still large white patches on the film, yet we know all the time that these will never be covered with printable detail before the high-lights are hopelessly choked up. With over-exposure the same danger exists: the whole plate clouds over, and one is apt to think that if left to develop for a normal time the image will be unprintable. Here is the merit of the factorial system, or even of the tank. It is not subject to panic, and it gives the exposure a chance.

A point which the portrait photographer is likely to overlook is the danger of halation, which will seriously impair the quality of his work if not guarded against. Many of the most rapid plates have very transparent films. This is not caused by lack of silver, but by the molecular condition of the haloid salts, and they are, therefore, very liable to give halation which is not confined to white draperies in which it causes flatness and loss of the delicate nuances, but actually to the outlines of the face and the eyes themselves. With slower plates there is not this danger, but some of the most rapid brands should always be backed. While the subject of plates is under discussion a word concerning the advantages of orthochromatic plates is necessary. Not only are they essential for the correct rendering of freckled complexions and auburn hair, but where there is the slightest tendency to sallowness of the skin or sunburn they are invaluable. A yellow screen may or may not be used, but with blue-eyed sitters and for many draperies

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a screen necessitating only double the exposure is beneficial. To go a step further, the best possible results are to be obtained upon panchromatic plates with at least a K2 screen. Such negatives require the smallest amount of retouching, and as they have to be developed in darkness are free from most of the ills caused by the ordinary methods of working.

Photography can never attain an assured position in the graphic arts until it is entirely under the control of the operator, and in this respect, in the majority of cases, it is far behind the pencil, the brush, or the etching point. The lesson the photographer has to learn to produce negatives of any desired quality is to standardize the chemical portion of his work as far as possible so that he may obtain all his desired results by exercising his skill in lighting and posing.—*British Journal of Photography.*

A Combined Permanganate-persulphate Reducer for Negatives

A REDUCER for negatives, which will act proportionately and which is under full control and not erratic in its action, is one of the things for which photographers have been looking for a long time. I believe I have discovered the formula for such a reducer, and would like to pass it on to the photographic world.

We all know the special characteristic of the persulphate reducer introduced by the Lumière Brothers years ago, namely, its selective tendency to act upon the denser portions of the image, and a very valuable agent it has proved, especially when used according to the Bennett formula.

But the persulphate reducer has the advantage of being erratic in many hands; for instance, a hardened and an unhardened film may behave quite differently in it; in fact, the hardened film may refuse to reduce at all. Some people say that the reducer acts more satisfactorily on an undried negative, and my experience agrees with this; and dried negatives, it is said, reduce more satisfactorily if soaked in water for one hour before reduction.

Others again say that images developed by certain developers are unfavorable to its action.

Then we all know how it may hang fire for some time, and then go off like an express train, and reduction may be carried too far before the negative can be plunged into the sulphite bath.

Again, the persulphate reducer is not proportional in its action, and though its selective action is very valuable when needed, yet a proportional reducer would generally be of much greater utility.

The permanganate reducer, introduced by Namias, in my opinion, is a very valuable one, much more so that the persulphate, and I cannot understand why it has not been more popular. I have not found it to be an unclean reducer, as Bennett avers, and as far as stains, I have never met with them when using an after clearing bath of potassium metabisulphite.

But when *considerable* reduction is desired, this reducer has a tendency to eat out the half-tones or more delicate portions of the image; this selective action, however, is very small when compared with Farmer's reducer. So, practically speaking, when only a slight reduction is needed, its action may be considered proportional.

The following is the formula I have generally used when employing potass. permanganate: 1 per cent. potass. permanganate, 100 min.; 10 per cent. sulphuric acid, 50 min.; water up to 4 ounces.

With this reducer, while reduction proceeds regularly enough, the exact time to remove the negative is not always certain, for the image may get a little clouded with a brown stain or deposit (an oxide of manganese). This, however, absolutely disappears in a clearing bath of 1 per cent. potass. metabisulphite.

It occurred to me one day to try the effect of combining these two reducing agents, when I found to my surprise that the disadvantages of each reducer had absolutely disappeared. I also discovered that by varying the proportions a reducer was obtained which, as far as the eye could judge, appeared proportional in its action; that is to say, suppose you happen to over-develop a negative, then by subsequent reduction in the following reducing solution a result is obtained which, as far as the eye can see, is the same as if development had been stopped at the right stage.

This I have tested as follows:

Two plates having the same exposure were developed for different times; after washing, the denser negative was reduced in this reducer and cleared, with the result that the two negatives are now almost impossible to distinguish.

Now to enumerate:

1. The action starts right away, and is quite regular, not hurrying up like persulphate alone.

2. It is not sensitive at all, like persulphate, to small traces of hypo from imperfect washing. In fact, with it I reduced with perfect ease a negative in which I could still just taste the hypo.

3. A hardening bath on the film does not interfere with its subsequent reduction in this reducer, the action being regular, though somewhat slowed.

4. As yet, in my hands, it has never shown the slightest erratic action.

5. During reduction it is clearer in its action than the acid permanganate reducer, thus the degree of reduction can be more perfectly estimated.

6. The solution, when in use, appears to keep in working order longer than the acid permanganate solution.

7. It is a proportional reducer (as far as the eye can see).

The reducer has the following simple formula:

Potass. permanganate, 1 per cent. solution	20 min.
Ammonium persulphate . .	10 grs.
Water to make	2 ozs.

It should be made up just before use.

The permanganate is best kept in a 1 per cent. solution (taking 24 grains in 5 fluid ounces of water).

The persulphate should be weighed out, or, if more convenient, 1 "tabloid" persulphate (11 grains, near enough) may be used.

You will notice that the reducer is weak when

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compared with other formulæ, but it acts quite rapidly enough.

After sufficient reduction the negative should be quickly rinsed in water and cleared for five minutes (quite) in 1 per cent. potass. metabisulphite, or in an acid fixing bath (I use the former), and then washed and dried.

Here in the Solomon Islands I have no opportunity for making exact photometrical tests, and so I have had to rely on visual tests only, which may not be quite accurate. If some scientific man, like Mr. Renwick or Dr. Kenneth Mees was to investigate the formula, he would probably find that the proportions might have to be adjusted to get strict proportional action, and I think the reducer merits such investigation.

I must say, in fairness, that the tests on which I have based this article are more limited than I should desire, but I must plead the difficulty of photography in a climate in which one rarely can obtain water under 80° F., and in which photographic materials, when opened, deteriorate so much in two or three weeks as to be almost useless.—NORMAN C. DECK, in *Australian Photo Review*.

DEVELOPERS FOR NEGATIVES

Pyro-Glycin.—Ch. Martin recommends a two-dish method, employing four stock solutions. He first boils 1200 c.c. distilled water for ten or twenty minutes to expel the air, and then dissolves 100 gms. anhydrous sodium sulphite in 800 c.c. of it. After boiling for a further ten minutes, boiled distilled water is added to make 1000 c.c., which liquid is divided into one 500 c.c. and two 250 c.c. lots.

Solutions: A. (Pyro 2 per cent.). To 200 c.c. of the cold sodium sulphite solution are added 5 gms. pyro, and the volume made up to 250 c.c. with the sulphite solution. B. (Glycin 2 per cent.). To 250 c.c. boiling sulphite solution, 5 gms. glycin are added, and the solution made up to 250 c.c. with the boiling sulphite solution. C. (Potass. or sodium carbonate). In 500 c.c. of the hot sulphite solution, 38 gms. of sodium carbonate, or 50 gms. of potass. carbonate, are dissolved, and a solution containing 8 per cent. sodium, or 10 per cent. potassium carbonate is thus obtained. D. is 10 per cent. bromide of potassium.

Developer I.: A, 10 c.c.; B, 10 c.c.; C, 5 c.c.; D, 6 to 8 drops.

Developer II.: A, 3 c.c.; B, 3 c.c.; C, 20 c.c.; D, 4 drops.

The plate is placed in II. If the image appears rapidly (over-exposure), the development is concluded in I. If normally exposed, only the high-lights appear in I. The plate is then transferred to II, where the half-tones and shadows come up. If enough density is not obtained, the negative is placed back in I for a few minutes.

If under-exposed, the image does not appear in I. It is then transferred to II, and left as long as may be necessary.—*Phot. Rev.*

Concentrated Single-Solution Developer.—M. J. Desalme has given the following instructions for making a concentrated solution which requires mixing with thirty to forty times its bulk of water to form the working developer. Hydrochloride of paramidophenol (75 gms.) is dissolved in 600 or 700 c.c. of hot water. If the solution is not quite colorless it is boiled for a few minutes with 10 gms. of animal black (previously washed with acid) and then filtered.

10 gms. of soda sulphite cryst. and 35 gms. of dry soda carbonate are then dissolved in 200 c.c. of warm water and added to the solution. A white precipitate of paramidophenol base is obtained, and, after allowing the mixture to cool, is filtered off on cloth. The paste which remains on the cloth is allowed to drain until its volume is not greater than about 300 c.c.

It is then placed in a glass or porcelain vessel and 100 c.c. soda bisulphite lye of 35° Beaumé added. Next is added, little by little, caustic soda solution of 40° Beaumé to dissolve the precipitate. About 80 c.c. are required, and as soon as the solution has cleared a few drops of the bisulphite solution are added until there is a very slight permanent precipitate. Water is then added to make a total bulk of 500 c.c., and the mixture then filtered and bottled.

For use, this stock solution is mixed with from thirty to forty times its bulk of water. As it readily oxidizes in the air, it is best to put it up in small bottles of ½ or 1 oz. capacity, using these to make 15 or 30 ozs. respectively of the working developer.—*Bull. Soc. Fr. Phot.*

Pyrocatechin Developer.—Dr. E. König calls attention again to the excellent properties of the pyrocatechin developer—namely, its first-rate keeping qualities, great freedom from fog, and ready adaptability to restraint with potassium bromide.

An important point in compounding it is to use the caustic alkali in *exactly* the proportion given. It is better to add the caustic soda from a solution of known strength, such as is commercially obtainable. Thus, for the caustic potash solution of 32 per cent., 87.5 gms. solution is taken in place of 28 gms. of the pure (100 per cent.) solid alkali. Commercial solid caustic potash is never 100 per cent.

A

Pyrocatechin . . .	55 gm.	480 gr.
Sodium sulphite cryst.	35 gm.	300 gr.
Water to make . .	500 c.c.	10 oz.

B

Caustic soda, 100 per cent.	28 gm.	245 gr.
Sodium sulphite cryst.	150 gm.	3 oz.
Water to make . .	500 c.c.	10 oz.

The volume of each separate solution should thus be 500 c.c. To make up the developer the following proportions are taken:

A, 10 c.c. B, 10 c.c. water, 150–250 c.c.
or,
A, ¼ oz. (fl.) B, ¼ oz. (fl.) water, 4 to 6 oz.

Using the smallest proportion water given above (150 c.c. or 4 oz.) greater density is very easily obtained.

In this developer one hydroxyl group of the pyrocatechin is entirely and the other half saturated. If a weaker acting developer is required, the following may be made up:

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A, 15 c.c. B, 10 c.c. water, 200 c.c.
or
A, ¾ oz. (fl.) B, ½ oz. (fl.) water, 10 oz.

the composition of which, when applied to the plate, corresponds with the formula $C_6H_4(OH)(ONa)$. On the other hand, a most energetic developer is produced by taking solutions as follows:

A, 10 c.c. B, 15 c.c. water, 200 c.c.
or,
A, ½ oz. (fl.) B, ¾ oz. (fl.) water, 10 oz.

This developer approximately corresponds with the formula $C_6H_4(ONa)_2$.—*British Journal of Photography.*

Pyro-stained Negatives

A CORRESPONDENT recently sent us a couple of what he called "useless negatives," pyro stained by the use of the following developer: (*a*) Water, 10 oz.; pyro, 60 gr.; potas. metabisulphite, 10 gr.; potas. bromide, 5 gr. (*b*) Water, 10 oz.; soda sulphite, 1 oz.; soda carbonate, 1 oz. Mix equal parts for use. In the first place, bromide of potassium is very seldom necessary with pyro-soda. It slows the action of the developer, and this in turn favors pyro-staining. Next, the proportion of 10 gr. metabisulphite for 60 gr. pyro in 10 oz. water is too small. Again, the sulphite in *b* may have been of poor quality, *i. e.*, part sulphate.

The querist sent a couple of film negatives—excellent, except for a rather peculiar orange or red-yellow stain—with which we made the following experiment:

(1 *a*) We first tried bathing this in a 10 gr. per ounce of potas. metabisulphite. This *very* slightly lightened the stain color, but the improvement was not worth the trouble. (1 *b*) This negative was then well washed, and submitted to the acid-alum bath, viz.: common (*i. e.*, potash) alum, 1 oz.; water, 1 pint; hydrochloric acid, 1 drm. In this the color was discharged in about ten minutes. The film was then well washed and dried. The color stain was effectively removed.

(2 *a*) To half a pint of water add an ounce of soda carbonate or kitchen washing soda. When this is dissolved add ½ oz. of "chloride of lime," otherwise called bleaching powder. This should be fresh enough to give off a smell of chlorine. It is often a somewhat sticky or damp mass. This mixture should be well stirred up two or three times, then allowed to settle, and the clear part poured off and filtered. This solution is variously known as Labaraque's solution, eau de Javelle, hypochloride solution, ozone bleach, etc. It is an active remover of most developer stains, but unfortunately with a soft gelatin it readily attacks and disintegrates the gelatin of the plate, and away goes more or less of the image. It is, therefore, a bit risky to use. With the second negative the gelatin got warningly soft and "slithery" before the stain was discharged. This method was at once abandoned and the film washed. (2 *b*) The next step was to bleach it in potas. bichromate, 10 gr.; water, 2 oz.; hydrochloric acid, 5 drops. It was then washed until the edges were stain-free—or we ought rather to say it should have been so washed, for, as a matter of fact, the margins were not as color-free as one could wish, but other matters were claiming attention.

The plate was then redeveloped with pyro-soda (no bromide), and then washed in acid water, *i. e.*, hydrochloric acid, say 20 drops or so per pint of water, as the tap water used is alkaline enough to favor pyro stain returning. The developer used was (*a*) Pyro 25 grs., potas. metabisulphite 12 gr., soda sulphite 90 gr., water to 2 oz. (*b*) Soda carbonate 3 drm., soda sulphite 2 drm., water to 8 oz. For a developer take 1 drm. *a* and add *b* to make 1 oz. This at 65° F., will, with average plates, give an average density negative in about five minutes, and if the solutions are reasonably fresh the negative is quite free from any developer stain.

In the writer's opinion one common cause of pyro-staining is the use of stale solutions. No matter how good the formula and chemicals, yet a freshly made solution is to be preferred. The foregoing experiments point to the advisability of having more than one string to one's bow. The one-process-only man may find himself badly caught if he relies on one formula, and finds the ingredients required unobtainable.

Clearing or Stain-Removing Baths

In former days, when pyro was almost the only developer, stain-removing baths were often called clearing baths. The following formulæ show the quantities per *ten ounces of water:*

1. Alum (potash, or preferably chrome in warm weather) ½ oz., hydrochloric acid 30 minims (½ drm.)
2. Alum ½ oz., ferrous sulphate 1-2 oz., sulphuric acid 2 drm.
3. Soda sulphite 1 oz., citric or tartaric acid ¼ oz.
4. Soda sulphite 1 oz., potas. metabisulphite 1 oz.
5. Hypo 1 oz., thiocarbonate 100 gr., soda bisulphite ½ oz.
6. Chrome alum 1 drm., thiocarbamide 30 gr., citric acid 1 drm.
7. Ammonium persulphate ½ oz. Render faintly alkaline with ammonia.
8. Ammonium sulphocyanide 1 drm., nitric acid 1 drm.
9. Iron perchloride 20 gr., citric acid 20 gr.
10. Soda sulphite 1 oz. Add sufficient sulphuric acid to evolve the odor of sulphurous acid.
11. Ammonium sulphocyanide 1 drm., gold chloride 5 gr.
12. "Chloride of lime," *i. e.*, bleaching powder ½ oz., soda carbonate (washing soda) 1 oz. Mix well, decant, and filter.
13. Equal parts of saturated solution of hypo and glycerin. Place the negative in a horizontal position; apply this mixture with a paint brush, and leave exposed to the air for some hours.
14. Expose the stained negative to strong sunlight.
15. Rehalogenize and redevelop.
16. Bathe in bromine water, and then expose to light.
17. Immerse in combined (gold and hypo, etc.) toning and fixing bath.

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18. Immerse for a minute in mercuric chloride bleaching bath. Wash well, and darken with ammonia, sulphite, developer, etc.

19. Saturated solution of chloride of lime. Filter; add just enough hydrochloric acid to evolve the smell of chlorine. Bleach the plate, wash and darken in very weak solution ammonium or sodium sulphide. Or dry the plate and expose it to strong daylight.

20. Bleach in 10 gr. potas. bichromate plus 10 minims hydrochloric acid. Wash the plate till stain-free. Rinse in water 1 oz., potas. permanganate 1 gr., citric acid 10 gr. Rinse in weak solution of potas. metabisulphite or soda bisulphite; redevelop.—*Amateur Photographer.*

Stripping Films from Glass Negatives

Hydrofluoric acid is often required by the photographer for stripping gelatin films from broken glass plates, but hydrofluoric acid is not easily procurable away from large chemical stores, and has the added disadvantage that a rubber bottle, costing five times that of the acid, must also be purchased, as the acid cannot be kept in a glass bottle. Again, hydrofluoric acid is not safe to have anywhere in the vicinity of lenses. Fortunately, a soluble fluoride, with the addition of an acid, will fulfil all photographic requirements, will keep well in powdered form in a well-corked bottle, and can be mixed for use in a few minutes.

The following method is recommended from long experience. To prevent the films stretching after stripping, soak for five minutes in:

Formaline, 40 per cent.	1 oz.
Water	20 oz.

Then rinse and dry. To strip the film, make up a solution of

Sodium fluoride	90 gr.
Water	5 oz.

When dissolved, pour into a celluloid dish (glass or porcelain must not be used), and add citric acid, 120 grains, dissolved in water, 1 oz. Mix the solutions thoroughly, then immerse the negative it is required to strip. In a few minutes the edges of the film will be detached. Lift out and rinse under the tap. Then take a piece of white paper (a trifle smaller than the negative), which has been soaking in clean water for at least five minutes, lay this on the film, and press in contact with the fingers. The film can now be lifted away from its plate, and can be placed upon another sheet of glass, or of celluloid, which has been previously coated with a thin film of gelatin and dried. The final support for the film is put into clean, cold water, the stripped film adhering to the paper is floated on the water, the two are placed in contact, then lifted out, the backing paper pulled away, and after a little careful draining, the plate may be stood up to dry.

Hydrochloric acid, 1 dram, or sulphuric acid, 1½ drams, may be substituted for the citric acid. Nitric acid can be used, but it has a softening effect upon gelatin, which then requires very great care in the subsequent operations.—W. T. Wilkinson in *British Journal of Photography.*

Printing Gaslight Papers and Post-cards by Daylight

Because gaslight papers are so called, it does not follow that they cannot be worked by daylight. Circumstances made it much more convenient for the writer to use daylight for printing his gaslight cards, not having either electric current or a gas supply, and since he first began to do so, now more than five years ago, he has not seen any reason why the practice should be discontinued in favor of artificial light.

Of course, gaslight paper cannot be printed like p.o.p. It is far too sensitive for that. It cannot be worked in daylight at all; a momentary exposure would be sufficient to fog it. This sensitiveness constitutes the difficulty which the gaslight printer has to encounter before he can use daylight, but when once he has taken steps to deal with it the rest is plain sailing.

In my own case there were large numbers of cards to be printed, and a constant light—if it could be got—which would allow very brief exposures was a desideratum. The dark-room in which the printing is done is a wooden shed, and an opening in the north wall of this, a foot square, was cut at such a height that the top of the opening was about three inches below the bench level. Inside this opening was fixed a kind of box, the top of which was formed of a sheet of plate glass at the level of the bench itself. Below this was a mirror at an angle of 45 degrees, made of ordinary looking glass. Outside the opening was a very similar fitting, a mirror below and a piece of plate glass above.

The whole arrangement is shown in section in the sketch. In this *C* and *D* are the two mirrors, *A* and *B* being the plate glass inside and outside respectively of the wall of the dark-room, and *E* a sliding shutter working on the inside of the wall and moving very freely. The inside of the apparatus is painted white.

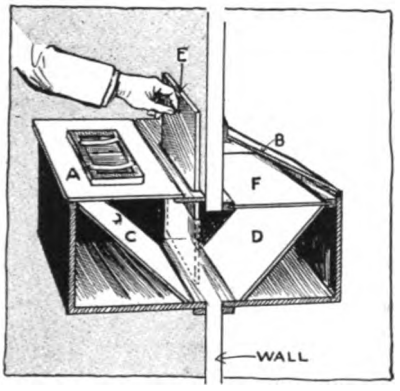
The way in which this is used will almost explain itself. The two mirrors reflect the light of the sky up on to the plate glass inside the dark-room, so that to make a print the frame is merely laid face downward on the glass and the shutter lifted for the necessary time. To prevent stray white light getting into the dark-room the plate glass is provided with a mask. This is best made of three-ply, with an opening a little smaller than the printing frame, and ledges so that the frame can be fitted into the opening.

It was found as soon as this was put into operation that the exposures were too short to be properly controlled, and that the action of the shutter did not expose the paper evenly. Accordingly, a sheet of ground glass was tried on the plate glass *B* outside, but in place of this a sheet of tissue paper bound up between a couple of sheets of glass was used. For protection from rain the plate glass outside was given a slope, and the tissue paper inserted in grooves below it, as shown at *F*. These grooves as originally made were wide, so that if necessary two or more such sheets of paper could be inserted; but it was found simpler to have a series of screens holding respectively one, two, three, and four sheets of tissue superposed.

These screens allow the light to be to some

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extent standardized. I have a test negative divided in four, and, before starting work, if I have any doubt about the light, I give four exposures on this, using one, two, three, and four pieces of tissue paper respectively. With each I can give an exposure of five seconds, and whichever is nearest to correct is used for succeeding exposures. As a matter of fact, in the great majority of instances I know quite well which screen to use, and do not actually have to test the light at all. Should it alter in the course of the day, the alteration is generally noticeable at once in the dark-room, as this also is illuminated by means of daylight with a suitable screen.



There are two large windows in the dark-room, one of which is covered with one layer of red and two of yellow fabric, while the other has two thicknesses of canary yellow paper, made translucent with vaseline, over it. For gaslight printing this latter window is the chief source of light, but the other is left uncovered, and such light as gets in by it helps the general illumination. For negative work opaque curtains are drawn across the lighter window so as to block it up entirely. Botb windows, it should be noted, are so placed that neither ever gets direct sunshine on it, at least not during those hours at which I am at work.

A window, closed with a shutter which can be quickly moved, and a box inside the window to hold the printing frame and prevent white light getting out into the room, should be easily constructed. In such a case it would be well to have a couple of thicknesses of white paper over the window, as this would not only prolong the exposures so that they were more manageable, but would also help to prevent the shutter from causing the illumination to be uneven.

I may mention that the very bright yellow light given by the window is just the thing for seeing what is going on. It enables development to be seen very comfortably. In fact, after being in the room for a quarter of an hour or so one ceases to realize altogether that the work is being done in a "dark-room" at all; the impression that the light is white is complete.—G. RIDGEWORTHY in *Photography*.

FINE FOCUSSING SCREENS

A SERIES of three screens for general and special work is obtained as follows: Take three extra-rapid plates and immerse them without any exposure at all in any non-staining developer free from bromide. At the end of five minutes remove two plates and fix and wash them in the usual way. At the end of twenty minutes remove the third plate from the developer, and fix and wash that also. Next iodize this third plate together with one of the others in a solution of iodine in potassium iodide. When the action is complete, rinse the plates and bleach them in dilute ammonia. Then wash and dry. Finally, take the remaining plate and immerse it in a solution containing 10 grains of potassium bichromate and 5 grains of hydrochloric acid to every ounce. When the chlorizing action is complete, rinse the plate and put it into a fresh plain-hypo fixing bath for ten minutes; then wash well and dry. You now have three screens of different degrees of density. No. 1 is a dense iodide screen, No. 2 a thin iodide screen, and No. 3 a thin "chromium" screen.

No. 1 screen will be an excellent substitute for the ground-glass in all ordinary work. It can be used without a magnifier or with one, and in either case it will show detail that would not be visible on a screen of ground-glass.

No. 2 (the thin iodide screen) cannot well be used without a magnifier, but while it is too nearly transparent to permit focussing with the eye alone, it shows enough grain to render the use of the magnifier easy. There is no accommodation difficulty, and the detail visible on the screen is a revelation to those who have never used anything but ground-glass. This screen is of special value for indoor work, such as architectural interiors and copying.

No. 3 (the chromium screen) is quite useless without a magnifier, being almost transparent to the eye; but with the magnifier a very fine grain becomes visible, and as it is perfectly easy to keep this grain and the image in focus at the same time there is no accommodation difficulty. This screen is a substitute for clear glass, and is especially adapted for copying and for low-power photomicrography. For high-power work it does not seem possible to find any good substitute for clear glass, but with moderate power the No. 3 screen seems to show almost as much detail as the clear glass, while it has not its disadvantages. The screens can be ruled in pencil or with fine cuts to give datum marks. We prefer a cross ruling of fine cuts made with a lancet, but this is only a matter of personal choice. If the cuts are adopted it is as well to give the screen an after-coating of celluloid varnish. The surface is somewhat readily abraded in the case of No. 2 and No. 3 screens, hence they should be carefully used.

It must be remembered that no fine-grain screen shows such a bright image as ground-glass. In comparison the image looks dull, but this is a very minor matter, and the extra detail visible far more than compensates for the loss of brightness.—*British Journal of Photography*.

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Hand-Coloring in Photography

I HAVE been frequently asked concerning the comparative difficulty of coloring a photograph and painting a landscape in water-colors. The comparison certainly favors the work on the photograph. Not only are the outlines perfectly shown without the involved labor of the pencil, but the shadows and high-lights are well defined, and frequently only a slight tinting is required to bring out the subject.

Here, however, is where the novice fails. Delighted with his first effect, secured perhaps with two or three raw primary colors, he forthwith frames it in a gay gilt frame, and proudly exhibits it to his sorrowing friends.

All the little intermediate tints and balances of color are disregarded, and the hard false values can make no appeal to the sense of the artistic which, in a greater or less measure, exists in everyone who can see or hear.

Better far a faint suggestion of color, leaving the completion of the picture to the imagination.

Right here we approach the real secret of successful coloring, and when we analyze it we find it harks back to the old primary requisites of all true art—balance and unity. Only here the balance is that of the complementary colors, and the unity is a condition to be satisfied with primary and secondary masses of color. And the imagination is given unlimited play in this work.

The artist soon learns to feel the colors which secure repose in a picture, and how to blend and balance them. But the great problem of unity is so seldom perfectly solved that we should not hope to be letter perfect. An undesirable note cannot always be eliminated—the lens is but a copyist—but it can be modified and subdued, and the desirable colors can be accentuated until the maximum harmony is secured. It must indeed be a difficult subject which the clever craftsman cannot bring into some sort of order. And certainly no one who has seen a landscape properly colored can be satisfied with the substitute in monotone.

Beautiful effects have been secured with single tones, and there are undoubtedly certain subjects which cannot be well rendered in any other manner. Those subjects of which color is essentially a part, however, are deserving of special study.

The principal complementary colors should of course be approximately balanced. Smallness of area can be compensated by brilliancy. The eye always notes with pleasure, amid the solid green of a woodland scene, the scarlet thread of some trailing vine, or the brilliant hue of a tiled roof against the deep purple hills. In many landscapes, particularly marines, there is preponderance of blue and green. This seems to do little harm, these being restful colors, but relief can usually be secured in the details, and in the ever friendly field of cloudland.

Whenever I forget my complementary colors I reason with myself on this fashion. Red, blue, yellow. These are primary—there ain't no more necessary to fill a color box. Each of 'em is complemented by the other two. Red calls for blue and yellow—we call that mixture green, and there you are.

Regarding mediums, they are legion. There are dozens of brands of aniline dye water-colors, many different oil mediums, standard water-colors, pastels, colored inks, powders, and the like. My own work is largely done with the anilines, on the score of convenience and celerity. Oil colors are best for sweeping treatments, being a little tedious for broken subjects.

The quality of paper on which the subject is printed makes considerable difference in the method of procedure. If a rough, unglazed paper is employed, using aniline colors, sweeping washes may be used, taking plenty of water to float the color. If on the other hand the paper is glazed, the washes must be swiftly applied, a small portion at a time, and the blotter freely used to prevent settlement and unevenness. The paper should be well soaked preparatory to coloring. For this class of paper the oil-colors are ideal. The color is usually rubbed on with a chamois for the large surfaces, and a small smudge or brush for the detail.

Standard oil-colors should be employed, thinned where necessary with poppy oil, and they have one cardinal virtue—they are absolutely permanent. On the other hand, aniline colors are usually very fugitive, and one may expend much time upon a picture, and then see it fade into monotone upon exposure to bright light. This condition can be greatly remedied, however. In the first place, none but the very best colors should be employed. They should be floated well into the paper with plenty of water, and, if anything, the picture should be a little overcolored. After completion, the entire surface should be well glazed with a wax or varnish preparation, of which there are several already on the market, and no picture should remain on exhibition without a glass. The wax and glass will be found to increase perceptibly the brilliancy of the colors, as well as acting as a preservative.

The artist should never forget that he is a privileged character, free to vary or mould the picture as he seex fit. He alone is held responsible for the final result, and this of necessity implies freedom of action. Poetic license is not a myth. It is a solid fact, of which the artist should avail himself to the full. Given this, and the greatest gift of all—preseverance—no colorist need despair of bringing forth creditable work.—Edward Lee Harrison.

Color Prints on Paper

Ordinary glass plates, either polished or matt, are cleaned thoroughly and smeared over with a thin film of vaseline, taking great care that all the surface gets covered. This caution is necessary because of the uneven surface of ordinary glass. The plate is next dusted with French chalk, which is rubbed into the vaseline, and the glass finally polished, leaving the surface quite bright and free from markings.

These plates are next coated on a level slab with a 3 per cent. solution of gelatin, allowing three drams of gelatin solution for a 6½ x 4¼ plate; other sizes in proportion. The plates should be

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warmed before coating, so that the gelatin solution flows evenly to the edges and corners. When the gelatin has set, the plates are placed on a rack, in a position away from dust, until the film is dry. When dry, the plates are stored until required for use, their keeping qualities being perfect. The film on one of these plates, after sensitizing, will carry two of the colored images required to constitute the print in color, the third one being provided by a bromide print.

The Red Image

For the red image, sensitize plates in a 3 per cent. solution of ammonium bichromate. Immerse five minutes, then drain, dab surface-dry with a clean, damp leather, and place to dry in a warm current of air, yellow light being used to illuminate the room. When dry, and while still warm, place film to film till required, and keep in a calcium box, as they rapidly deteriorate otherwise. From the red printing negative a transparent positive is made on thin celluloid, and the exposure to light of the sensitive gelatin on the glass plate, made with the celluloid next to bichromated film. The exposure in a good diffused light is from ten to fifteen minutes, and its progress can be seen at the back of plate. After exposure, the plate is placed in clean cold water until all traces of yellow are eliminated, and is then allowed to dry. When dry, immerse in a dye bath made up of:

Judson's magenta dye	1 oz.
Water	20 oz.

Here the image will quickly develop; only the soft portions of gelatin composing the image take the dye. When the image is sufficiently strong, wash and dry. If an image is over-dyed, soaking in clean water will gradually reduce the overplus.

The Blue Print

For the blue print the gelatin-coated plates are sensitized by immersion in 10 per cent. solution of ferric ammonium citrate (green) for five minutes, drained and dabbed surface-dry with a clean, damp leather (*not* the same as used for the red plate), and are dried in a warm current of air. These plates only keep good for a few hours. Damp is fatal to a clean image, therefore the negative should be dry and slightly warm at the time it and the sensitive plate are placed in contact. The blue-printing negative (red-filter) is printed from on these plates and the exposure to light is about the same as given for the red plate.

When the exposure to light is complete, the plate is immersed in a 10 per cent. solution of potassium ferricyanide (a blue image at once developing), and is then washed and dried.

The Yellow Print

For the yellow print (negative taken through blue-violet filter) a bromide print is made upon semi-matt bromide paper, full exposure being given so as to secure a print too dark for use as an ordinary black print. This print is fixed and washed in the usual manner, and is dried (the latter is preferable, although not absolutely necessary). It is then bleached in—

Potassium bichromate	½ oz.
Water	20 oz.

When dissolved, add 2 drams of hydrochloric acid, wash until all traces of bichromate have been removed, but do not wash too long. Next immerse in a solution of—

Mercury iodide	60 gr.
dissolved in	
Soda sulphite	2 oz.
Water	10 oz.

In this solution the image will assume a vivid yellow, which will grow more intense during the subsequent washing, which should not be less than fifteen minutes in running water; after this, immerse in a 5 per cent. mixture of formalin, rinse and dry.

Now we are ready to put the prints together, for which purpose a solution of gelatin is required, made up of:

Gelatin	1 oz.
Water	10 oz.

Soak the gelatin until soft, then melt in water bath, add 2 ozs. of glacial acetic acid, and when well mixed add 5 ozs. of methylated spirit. Use this mixture at 90° F.

The bromide print and the plate with red image are placed in this solution. When the print is quite soft, place the two films together, lift out of solution, and drain. When drained, adjust the images carefully until in register, then squeegee in contact and put away to dry. When dry, strip off the glass; put the dual print into the re-melted gelatin stripping solution, with the plate holding the blue image. When print is well soaked, lift out, drain, adjust in register, and squeegee in contact, then put away to dry, and when dry strip from the glass support, and the tricolor print is complete.

The manipulations are not so tedious as they read, and there is a variation of the above which requires only one plate and one transfer. To carry this out, first of all sensitize a gelatinized plate in 10 per cent. solution of ammonium bichromate, immersing for five minutes, drain, dab it surface-dry, and then dry in a current of warm air. Expose this to light under a transparent positive made from the red-printer negative. When exposure is finished, wash away all traces of bichromate and dry. Then dye in the magenta dye bath given above, wash, and again dry. Next immerse in 10 per cent. solution of ferric ammonium citrate (green) for five minutes, drain, dab surface-dry, and dry in a warm current of air. Then register the image of blue-printer negative with the red image, clamp the two plates in contact with bulldog clips, and expose to light through the blue-printer negative, taking care to protect back of plate from any light-action. The exposures requisite are about as given when describing the separate-plate method.

After this exposure to light, immersion in a 10 per cent. solution of potassium ferricyanide will develop a blue image. Then wash and dry, when the plate is ready for immersion in the

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gelatin stripping solution, together with a yellow bromide print. The images are brought into registration, squeegeed in contact, and put away to dry.

Both methods are quite practical if care and skill are exercised. The plates, when sensitized for either the red or blue images, must be carefully shielded from actinic light; a bright incandescent light—gas or electric—is quite sufficient to produce a slight fog, which results in a flat image. Damp is another danger which must be guarded against, but if all due precautions are taken good color prints are certain.—W. T. WILKINSON in *British Journal of Photography.*

SYSTEM IN EXPERIMENTAL WORK

THE present activity in "capturing enemy trade" has led the present writer to offer a few remarks on experimental work to those who do not as yet "know the ropes." Many good ideas have failed to become commercially applicable, solely owing to the lack of ability of the inventors to work them out to such a point that a third party could produce good results with them. Another point worth noting is the appalling waste of time by clever workers on processes which can never be commercially successful, owing to the extremely limited market or to the fundamental difficulties of such processes. Although it seems rather a sordid view to take of things, I am of opinion that if a process is not likely to be in good demand by the public, it is rather wasteful to spend time and money on it. There is a tendency for the inventor to think that just because he has a *new* idea he has a fortune in prospect. Edison is reported to have said that an invention is one part inspiration and nine parts perspiration. I would like to add that a successful invention is generally one part common sense and nine parts luck. However, the proportion of luck can be minimized by carefully choosing for a subject for research something for which there is likely to be a good market.

Having decided on what subject to expend one's energy, the work to be done should be planned out in a comprehensive manner so as to consider all the possibilities. It often happens that some interesting "by-product" of the research will be a fruitful source of income when the main object has failed.

Comparison may be made with the great German chemical factories, where research is carried out in an exhaustive manner, as much with the object of prospecting for any useful thing that may reveal itself as to perfect some individual process. Of course, there is a danger of diffusing one's energies if this is taken too literally, but it is worth remembering that there are jewels to be picked up by the way when travelling toward the goal of the research worker.

As to the methods by which one can get results with the least waste of energy and hard cash, I believe that research work should be planned out on the lines of a genealogical chart. Or, imagine that you are looking at the palm of your hand as if it were the map of a town; then your fingers may represent different roads for travelling. Some may prove to be *culs-de-sac*, while others may lead to further by-ways. As an example of what is meant, I give an outline of some abortive work carried out by me three or four years ago, the "by-products" of which, however, have been turned to account.

The work attempted was an endeavor to produce tricolor paper prints from Autochrome transparencies. The first thing to do was to consider all the possible methods of doing this. They were written down as follows:

1. By direct printing by the bleach-out process.

2. By tricolor carbon prints from negatives made from the Autochromes.

3. By printing in colorless gelatin, which is subsequently dyed and the prints superimposed.

4. By making contact negatives from the Autocrhome for each color-sensation, converting such negatives into reliefs by some such process as the Ozobrome, and using these as printing plates either with greasy inks or dyes.

5. By making gelatin reliefs from separate negatives, and using them as printing plates.

6. By proceeding as in No. 5, dyeing up very strongly, applying the relief to a hectograph, then printing from the hectograph on to the paper base, and so on.

On consideration it was found that No. 1 was unworkable owing to the dyes in the Autochrome itself not being sufficiently permanent to allow of being placed in a bright light for any considerable length of time. In order to make this process workable, some development method would be necessary to bleach out the dyes.

No. 2 is a well-known method which has not met with pronounced success among the general mass of workers. The same remarks apply to No. 3.

No. 4 has possibilities, but would probably be found too difficult for the average worker.

No. 5. There are a number of ways of working this out which need separate consideration. The same can be said of No. 6.

In considering No. 5, the following are some of the ways in which a gelatin relief can be used as a printing plate:

5. (*a*) By the bromoil transfer process.

(*b*) By a modified collotype process.

(*c*) By soaking the relief in an adjective (or developable) color, the paper being soaked in a mordant.

(*d*) By dyeing up with ordinary aniline dyes and using a transfer paper which has more affinity for the dyes than the relief.

(*e*) By dyeing the reliefs up very strongly, using a mixture of dye and glycerin, and getting offsets on paper, etc.

Method 5 (*d*) could be worked out with the following variations:

5 (*d*). (1) By printing on ordinary unprepared paper.

(2) By printing on sized or gelatin-coated paper.

(3) By damping the paper with water or alcohol, or both, adding sugar to the water if necessary.

Method 6 could be varied as follows:

6. (*a*) By using an ordinary gelatin hectograph.

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(*b*) By using hectograph sheets—*i. e.*, paper coated with gelatin composition.

(*c*) By using a so-called clay hectograph, consisting of kaolin, pipe-clay, whitting, or Portland cement, impregnated with glycerin.

(*d*) By using composition (*c*) coated on pieces of card.

The printing of the reliefs might be carried out by one of the methods stated below:

5 (*d*) and 6. (1) Half-tone negatives could be used in order to ensure good gradation.

(2) The gelatin relief could be made on ordinary carbon tissue and developed upon zinc or celluloid sheets.

(3) Celluloid, coated with gelatin, could be sensitized with bichromate and printed through the celluloid.

(4) Carbon tissue could be sensitized and squeegeed to thin transparent celluloid, and then printed through the celluloid to avoid stretching of paper.

(5) In the case of method 6, all the three reliefs could be impressed upon one hectograph—*i. e.*, superimposed.

(6) Or three separate hectographs could be used.

Each problem as it arises in the course of working should be analyzed in some such way. If this is done there will not be much risk of promising possibilities being overlooked.

It may be of interest to state that the method 6 failed, owing to the difficulty in obtaining anything like a reasonable balance between the colors. In one case a portrait of a lady turned out fairly well, with the exception of the eyes, which were a brilliant green!

This outline of some of the methods used in working out one process can be applied to any research work. The point that I wish to emphasize is, that unless all or most of the possible methods are considered the results of the research cannot be decisive.

In conclusion, I am of opinion that commercial success is the real test of the value of research work. So far as the average worker is concerned, a monetary return is the ultimate object in view, and the commercial side of the problem should never be lost sight of.—JAMES GRAHAM in *British Journal of Photography.*

THE BLACKENING OF BRASS BY AMMONIACAL CARBONATE SOLUTIONS

(A communication from the Eastman Research Laboratory.)

THERE is a considerable demand for a satisfactory chemical method of blackening brass, and since the most generally satisfactory method is probably that which utilizes copper carbonate dissolved in ammonia solution, the laboratory has conduced a number of experiments on the best conditions for obtaining a good black deposit.

It was found that in the preparation of the solution the most important points are the concentration of the ammonia employed and the preparation of the copper carbonate.

The copper carbonate is precipitated by adding a hot filtered solution of sodium carbonate to a hot filtered solution of copper sulphate, and is then washed very thoroughly by decantation until test shows it to be free from copper and sulphates. This thorough washing is very essential. The copper carbonate can then be filtered by using an aluminium filter dish and kept in the form of paste, though it is sometimes more convenient to dry by heat and use the powder. Paper must not be used for filtering because small threads may dissolve in the ammoniacal copper solution and affect the result.

The brass to be blackened should be agitated in the solution at a temperature near 100° F. After blackening, it should be rinsed off and either dried or baked. The most satisfactory solution will be found to be as follows:

Ammonia, 10 per cent. sol. .	25 parts
Copper carbonate, dry . . .	5 parts
Water to make	100 parts

The important part of this formula is the exact amount of ammonia used, and this will vary slightly with the nature of the brass; a considerable increase or decrease of the ammonia will prevent a good surface being obtained. Some of the copper carbonate will remain in suspension, since the ammonia will be insufficient to dissolve it all; the undissolved carbonate, however, will do no harm. Some advantage can be gained by adding substances such as gelatin, fish-glue, gums, etc., to the bath, the most satisfactory addition being a small amount of fish-glue; the addition of 3 per cent. (3 parts) of Le Page's process fish-glue to the above formula is a distinct advantage, and if, after treatment, the brass is stoved, a very good black finish can be obtained. The time for treatment in the bath with or without the fish-glue will be from 15 to 30 minutes to get a satisfactory black deposit.—*B. J.*, 1916, p. 370.

SAFE LIGHTS FOR BROMIDE PAPER

IT is not generally realized what a large amount of light can be used in the dark-room when working bromide paper. Provided it is of the right quality, the entire room can be flooded with bright yellow light that would probably frighten some of the old school who prefer to work even slow bromide paper in semi-darkness. One thickness of ordinary "canary fabric," with a strong light behind, can, of course, be employed; but I find that home-made safelights are very simple to produce, and both for bromide paper and even for plates admit a large amount of perfectly safe light. To make these I coat a piece of glass of the required size with a substratum of plain gelatin. This is done quite easily if the plate is warmed first, and the gelatin poured on carefully, as when varnishing a negative. When the gelatin has set hard and the plate is cold, it is soaked in a solution of ordinary yellow dye, which can be obtained in penny packets from the oilshops. A penny packet is sufficient to stain dozens of pieces of glass a bright canary-yellow color that is admirable for the purpose. The best plan is to add a little formalin to the dye solution, and to dye two pieces of glass of the same size. When these are quite dry they are bound together face to face like a lantern slide, and admit a large quantity of

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light to the dark-room, which will be found perfectly safe for bromide paper. If a diffused light is preferred a piece of thin tissue paper or papier minéral can be inserted between the two pieces of glass when they are bound together. With the aid of a penny packet of ordinary red dye I have also made red safe-lights which, when tested, proved to be perfectly safe for non-orthochromatic plates.—*Amateur Photographer.*

Ferrocyanide in the Hydroquinone Developer

John Beeby, in *Down Town Topics*, revives and recommends as a soft-working hydroquinone developer the following:

	A	
Hydroquinone	150 gr.	9.7 gm.
Ferrocyanide of potassium	390 gr.	25.2 gm.
Sulphite of soda	540 gr.	35.0 gm.
Water	35 oz.	1000.0 c.c.

	B	
Caustic soda	2 oz.	100.0 gm.
Water	12 oz.	600.0 c.c.

These solutions are mixed in the proportion of about 2 ounces of A to 5 to 8 drams of B. The developer is recommended as equally suitable for bromide papers, particularly when printing from harsh negatives.

Developers for Negatives

development of a fine-grained image

Lumière and Seyewetz find that slow development in a solution which contains a solvent of silver bromide favors the finest grain. The best developer is:

Paraphenylene diamine (slight solvent of silver bromide)	10 gm.
Anhydrous soda sulphite	60 gm.
Water	1000 c.c.

Or 5 to 30 gm. of ammonium chloride is added to 100 c.c. normal hydroquinone developer.—*Phot. Korr.*

stock developing solutions

G. Turner recommends the use of stock solutions of the separate chemicals as a means of time saving in making up developer employed in large quantity. In the case of the formula in general use, namely, as follows:

	1
Pyro	1 oz.
Metabisulphite of potash	½ oz.
Soda sulphite	8 oz.
Water	80 oz.

	2
Soda carbonate	8 oz.
Water	80 oz.

a stock pyro solution is first made up consisting of 20 oz. pyro dissolved in 80 oz. water, with the immediate addition of 3 oz. potassium metabisulphite dissolved in water. This makes a stock solution containing 1 oz. pyro in every 4 oz. of the liquid. It is kept in a well-stoppered green glass bottle (Winchester quart).

For the sulphite 4 pounds of anhydrous sulphite is dissolved in 4 gallons of water, the mixture being made in a stoneware bottle (fitted with draw-off cock), in which it is kept. This stock solution is labelled:

"Developer No. 1. Sulphite Stock Solution. For use add one quart per Winchester."

Similarly, a second 4-gallon bottle holds solution of anhydrous soda carbonate of the same strength. It is labelled:

"Developer No. 2, Soda Carbonate Stock Solution. Take 1 quart per Winchester."

Thus, in order to make up a fresh supply of developing solution, all that is necessary is to measure out as follows:

	1
Pyro stock solution	4 oz.
Sulphite stock solution	1 qt. (40 oz.)
Water to fill bottle to	80 oz.

Shake well for a few seconds.

	2
Soda carbonate stock solution	1 qt. (40 oz.)
Fill bottle and shake well to	80 oz.

Using a quart enameled measure, this operation is a matter of only two minutes, while to renew the stock solutions only a few minutes is necessary, since the anhydrous chemicals dissolve very rapidly in hot water.—*British Journal of Photography.*

The Value of the Swing Front

Modern lenses when used at their full apertures will give such good definition that for open landscape work no stopping down is required (writes "C. H." in the *Amateur Photographer*. Apertures of *f*/6 enable one to use a rapid orthochromatic plate with, say, a 6 or 8 times light-filter for such subjects—and they are many—as will gain by such a method. But sometimes the foreground approaches the camera in such a way that the nearer portion is out of focus when suitable definition has been obtained on the rest of the subject. In such cases a swing front or a swing lens is a great advantage. Some hand-stand cameras possess this desirable addition, and I have recently had a hand-camera made to which a swing front was fitted for this focussing advantage, and nothing else. With screen focussing—and, of course, a reflex camera gives screen focussing in its own way—it is not very material whether the front or the lens is made to swing, but where adjustments have to be made blindfold the swing lens is better. For most adjustments, however, the vertical displacement of the image by swinging the front is very slight, provided the front is pivoted through the axis of the lens, and where the lens is deeply set in the front panel it is almost negligible. The degree of adjustment could be scaled according to the distance of that part of the foreground

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required in sharp focus, it being assumed that the lens was set at the hyperfocal distance for the *f* 6 stop.

Photographing Small Natural History Specimens

In order to give the spectator some idea of actual size or "scale," it is highly advisable to include something of known size in the picture—a coin, for instance. But often one gets a better idea from a small scale of inches, millimeters, etc. For this it is convenient to keep at hand a few pieces of white card of various lengths, on which a scale (of inches, etc.) is drawn. The three following will be found generally useful: (*a*) A foot, showing twelve inches. (*b*) A three-inch strip, showing half and quarter inches. (*c*) A one-inch piece, showing quarters, eighths, and dots for sixteenths.—*Amateur Photographer.*

Red Ink for Diagrams

From time to time the ordinary photographer wishes to draw a diagram from which a lantern slide has to be made for lecture purposes. Strange as it may sound, yet it will be found a fact that a cleaner, brighter, and better result will be obtained if the diagram be drawn with red ink on white paper, than if ordinary (so-called) black ink be used, assuming that an ordinary plate be used, which preferably may be a slow rather than a rapid one.—*Amateur Photographer.*

Squeegeed Prints

A careful examination of the surface of a print which has been squeegeed to glass will often show that it is freely covered with specks, hairs, etc., blemishes which will not be perceptible when the print has been hung up and allowed to dry in the ordinary way. These blemishes are undoubtedly due to the vigorous polishing which is usually given to the glass just before squeegeeing. The polishing material provides some of the dust, etc., itself, but more is due to the electrification of the glass which it brings about, causing it to attract any floating particles in the neighboring air. A complete preventive (says a writer in *Photography*) is to immerse the glass in the water in which the print is lying, bring the two in contact, and then to lift them out together and squeegee. This would also very greatly reduce the risk of any air-bells between the film and the glass; in fact, none could be present unless with gross carelessness in squeegeeing. When the prints are likely to be examined under a magnifying glass, as is often the case when they are photomicrographs or similar records, their appearance is greatly improved by avoiding dust particles in this way.

For Washing Prints

If prints are to be washed as quickly and as thoroughly as we wash plates they must be kept apart from one another, and (writes H. T. Forbes in *Photography*) I think my method of doing this will be found as efficient as any. I have some half a dozen light wooden frames, 9 in. by 7 in., the wood being half an inch wide at the two sides and a quarter of an inch wide at the ends. Round each frame fine string is wound tightly and secured. When a number of prints are to be washed as many as it will hold without overlapping each other are laid out on the strings of one frame, the next frame is put on top and a fresh lot put on it, then the next frame, and so on. Finally, the frames are bound together with elastic bands and put bodily into the washer. Every print is thus exposed to the action of the water on both sides, the narrow ends allowing the water to permeate freely between the frames. In my case the frames were made of white wood, screwed, finished with glass paper, and then given a coat of shellac varnish.

Retouching Pinholes on Negatives

For covering pinholes or scratches on negatives a carmine water-color is generally used, thinned out to the proper density with water. This is applied with a fine-pointed camel-hair pencil. But it generally happens that, when the color is dry, it not only fails to cover the hole, but collects around the edge, forming a darker ring and making the hole worse than before. To obviate this difficulty, make a retouching varnish of one part of resin dissolved in ten parts of turpentine and rub it lightly over the hole. This will dry in a few seconds and the color can be applied at once. Another plan is to warm the negative slightly before retouching. —*Revue Photographique.*

Labels for Glass Bottles

The following simple and effective means of labelling glass bottles may be of use to some readers. Take a piece of thin paper, and on this, in fairly bold reversed type, write the name required in waterproof Indian ink, then cut to the size of the label. This is then stuck on the bottle, with seccotine preferably, with the written side to the glass. When this has adhered coat it with two or three coats of negative varnish, which will make the paper translucent and the lettering show clearly through. The label will then be easily decipherable, even in the ruby light, by holding the bottle up to the lamp and looking through it, while also having the advantage of not staining easily, nor coming off when wet.—*British Journal of Photography.*

Child Portraiture

We have all experienced, at some time or other, the impossible youngster, when no amount of singing, story-telling, or absurd gymnastic feats will induce that pretty smile with the mother seems to imagine so necessary to the picture. When you have exhausted all the means you know and yourself into the bargain, don't give up, but, while apparently taking no notice of the child, break something, and appear to be endeavoring to mend it. If your assistant is smart he ought to secure several good pictures while the child is all the time

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watching you with a really interested expression. I have never known this to fail, and have arranged in the studio a special chair-leg to be broken for the benefit of my youthful sitters. While mending the article move your position now and again to give the operator an opportunity of securing different poses. To retain the child's interest, of course, you must display some difficulty in the process of repairing.—ARTHUR L. CHERRY, in *British Journal of Photography.*

FINE GROUND-GLASS SCREENS

CARBORUNDUM powder, obtainable from any ironmonger, may be relied upon (if the finest and purest quality is used) to produce a first-class focussing screen in a very short time. With the exception of the powder, the only thing wanted is a "rubber," which consists of a piece of glass fixed with seccotine to a block of wood, which serves as a handle. In use the glass to be ground is wetted, a little powder is thrown upon it, and then the rubber is brought into play. Of course, the surface of the rubber becomes ground as well as that of the plate, and when it is in this condition it works at its best. The time required depends on the size of the rubber. Using one about 2 inches by 1 a 5 by 4 screen can be completely and perfectly ground in five minutes or less. For large sheets a larger "rubber" is required, and one of the best is a cutting shape fitted with a handle. One that is chipped and useless for trimming purposes will act excellently. A most useful application of the "rubber" is for grinding the backs of lantern or stereo slides. The former are sometimes, and the latter nearly always, all the better for being on ground-glass, yet transparency plates on ground-glass are not always available. A second cover-glass is the usual expedient, but this adds unnecessarily to the weight and thickness of the slide. In view of the possibility of wet and dirt getting on the film side of the plate during the grinding process it is very advisable to formalin, dry, and varnish the side before grinding. Put the slide in a printing-frame, glass slide out, and grind with a small rubber. Take care that the slide is well backed up, and that the springs are strong enough to hold it up against the rubber. It can easily be backed up with a few spare or spoilt plates, or with cardboard, and then there will be no fear of the plate giving from the rubber, and so letting wet in under the frame rebate. When ground the glass is cleaned while still in the frame, and on removal the film side should be found to be perfectly clean.—*British Journal of Photography.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patients as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Automatic focussing camera. J. Becker. 1190214.
Repeating camera. C. R. Pfander. 1190000.
Color projection. L. Landry. 1189266.
Etching machine. H. S. & L. F. Levy. 1189457.
Film-developing box. C. W. Greene. 1189359.
Print drier. F. W. Potter. 1189383.
M. P. film cleaner. E. F. Shue. 1189633.
M. P. examiner. R. T. St. James. 1190204.
Projector. R. H. Waller. 1189785.
M. P. theatre. P. M. Erickson. 1189799.
Color pictures. B. Boubnoff. 1190095.
X-ray tube. C. E. Campbell. 1190169.
Camera. E. L. Brownson. 1190717.
Camera. A. S. Cramer. 1191066.
Camera. E. M. F. Guignard. 1190966.
Camera. J. Becker. 1190623.
Shutter. Curowski & Martini. 1190301.
Camera recorder. W. H. Martin. 1190422.
M. P. shutter. C. Dowson. 1191069.
Film synchronizer. J. W. Billings. 1190370.
Film unwinding device. J. R. Carroll. 1190262.
Photo-engraving. H. J. Van Valkenburg. 1190487.
Plate holder. J. A. Robertson. 1190954.
Color photography. J. &. E. Rheinberg. 1191034.
Rollfilm attachment. R. V. Whatley. 1191632.
Film mending device. W. H. Kunert. 1191321.
Developing tank. W. E. & C. A. Elliot. 1191166.
Kinetoscope. F. E. Baldwin. 1191145.
Plate box. O. Hoel. 1191597.
M. P. machine. L. Mandel. 1191329.
M. P. projector. N. Power. 1191224.
Projector. C. E. Chapman. 1191761.
Camera casing. G. O. Smith. 1192696.
Exposure attachment. R. Troxell. 1192710.
M. P. camera. M. Meushaw. 1192666.
Holder. H. L. Gray. 1192058.
M. P. apparatus. St. Louis. 1192094.
Film winder. H. J. Hamann. 1192517.
Projector. E. E. Maggard. 1192658.
Color photography. P. D. Brewster. 1191941.
Restoring M. P. films. F. W. Hochstetter. 1192424.

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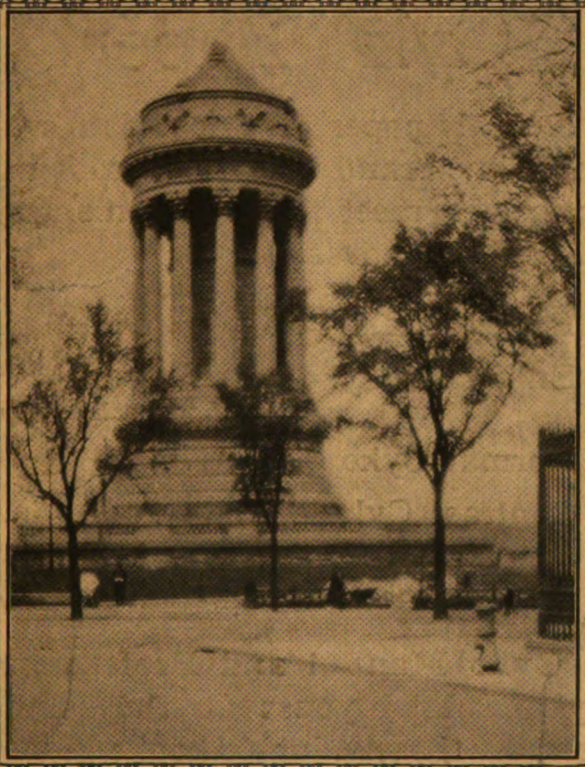
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The
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VOLUME LIII OCTOBER, 1916 NUMBER 10

NORMAN BUTLER, ARTIST-PHOTOGRAPHER AN INTERVIEW

By C. W.

WHEN the New York School of Fine and Applied Art decided, two years ago, to follow the lead of other institutions in establishing a course in artistic photography they engaged Norman Butler to conduct the class. This appointment was made, not on the strength of Mr. Butler's reputation, for he was not at that time widely known, but solely because of the high character of his work, which had by accident come to the attention of the president of the school. This is only one example of the sort of recognition Mr. Butler's ability as an artist-photographer has brought him.

As a student in the school at the time I came into close contact with the new instructor, and as I had long taken a special interest in watching the development of photography as an art I was interested in seeing what this "new man" had to contribute to the progress of his art, and later in discussing with him the various phases of the new movement in photography. For personal reasons Mr. Butler was obliged after a short season to give up his work in the school, and it happened that I did not see him again for many months. But recently, in passing by the quaint Picturecraft Shop in East Twenty-eighth Street, New York, I noticed a framed photograph in the window and the name "Norman Butler, artist-photographer," underneath, which was doing duty as a show-case. I lost no time in making my way to his studio on the floor above the shop, with the idea of renewing acquaintance. Perhaps I should not have said "studio." Mr. Butler almost boasts of the fact that he has no studio, in the accepted sense of the word. He says, "Your home is my studio." He calls his place his "workshop and telephone headquarters."

But from this same little workshop he has turned out a long series of interesting portraits of notable people and others not so notable (he makes them *all* seem interesting somehow), besides a consider-

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able number of "studies" of figure, landscape, and still life. He opens for you a large portfolio, with the invitation to "look it thru"; and upon the walls are framed photographs—"some of my favorite monstrosities," as he explains. (By that, he hastens to add, he means the prints, not the subjects!) There are two things that you notice at a glance—one is, that, in the case of the portraits, every



"STILL LIFE"
BY NORMAN BUTLER

one impresses you as being a good likeness; you feel that some characteristic expression has been caught, that the subjects are living, breathing beings, free from all self-consciousness. The portraits, as a newspaper art critic once said to him, are filled with human interest. The other thing is that, although every print is unmistakably Butler's, there is after all a wonderful variety in the work as a whole, both in subject matter and in treatment. What surprises you most, perhaps, is the man's versatility. While his portraits of children are particularly charming, it seems that he is as much at home with elderly men and women, showing a keen sympathetic adaptability to old as well as young. And the landscapes and still-life studies show the same sympathetic treatment and great technical skill.

Upon my pointing out the wide range of his work, Mr. Butler remarked modestly that as a matter of course he did everything—and everybody—that came his way, and that he was interested in any problem that might be presented to him in the course of a day's work. When I spoke of the wonderful variety of effects shown in his prints he came back at me with this:

"I strive less to cultivate a consistent style," he said, "than to find the best solution I can of the given problem under the given conditions. Although I have a standard of excellence that I try to live up to, I do not attempt necessarily on every occasion to produce something like what I have done before. Of course, being a home portraitist, I work under a great variety of conditions, some of them advantageous, many of them quite the opposite. Probably some of my good things are accidents, as a matter of fact—I don't know. Whenever I get a *poor*



MRS. INEZ M. BOISSEVAIN
BY NORMAN BUTLER

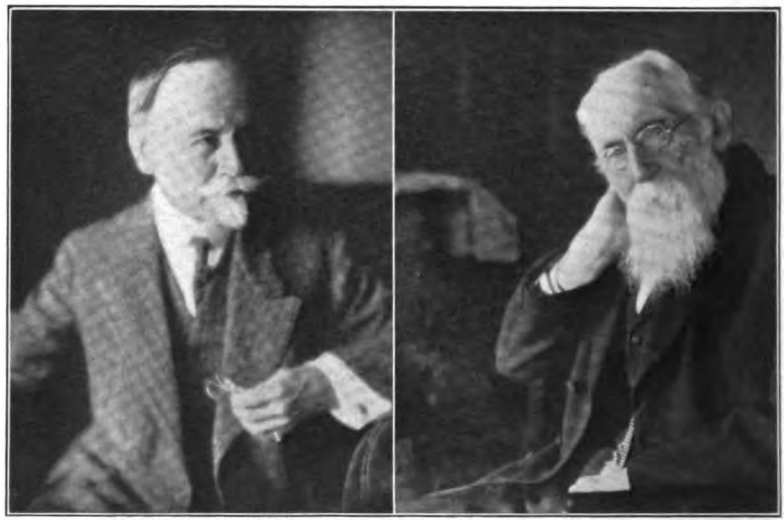
result I call it an accident anyway—and lay it to conditions or something. Happy chance, as every photographer knows, covers (up) a multitude of faults and may account for not a few virtues. At least some of my successes I believe I could repeat—in fact, some of them I have repeated. If that constitutes a weakness, then I am afraid I must acknowledge the failing."

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ELLIS PARKER BUTLER
By NORMAN BUTLER
NEW YORK

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GEORGE W. CABLE HON. HUGH H. LUSK

BY NORMAN BUTLER

But whatever Mr. Butler's own explanation may be, his friends will insist that there must be something besides chance here, since not only is there variety of subject matter and treatment, but there is always a sense of fitness, a certain appropriateness of treatment according to subject. You do not feel that it is the result of striving after effect. It is genuine virtuosity.

This versatility is not surprising when you know a few of the facts of Mr. Butler's life. Born and reared in the Berkshire Hills in Massachusetts—near Lenox—he absorbed, as he says, "all the nature there is up there—and there is *some*." His mother was musical, and his father is a successful landscape architect, one of those men who plan effects, not with log, chain, and transit, but with unerring instinct for beauty of color, line, and space—in other words, an artist of taste and feeling. College training gave him, besides a knowledge of the history of art and literature, in which he specialized, a breadth of view and broad human sympathies which have proved valuable as a foundation for his profession, an advantage, by the way, not shared by many professional photographers.

"And now," I asked, "how did it happen that you chose photography rather than painting or music as a profession?"

He replied, with the air of one who had a long story to tell and must tell it quickly for fear of missing the next train:

"For a long time my interest in photography as a means of artistic expression had been growing. It started, if I remember, with a small private exhibition of photographs by George Seeley at his home in Stockbridge, Massachusetts. There the work of this master, since become one of our leading pictorialists, opened my eyes to the possibilities in photography as an art medium. I was stimulated to the point of buying an efficient camera, and then began a long period of study and experiment in odd moments as I had opportunity. I owe a debt of gratitude to the friends and relatives who gave themselves into my hands to be experimented upon—no light matter in a process universally declared to be more painful than dentistry! Later I acquired my little family, and the members of it patiently submitted to untold cruelty—"Baby Carver" shows one of the results. Then, having acquired a certain proficiency in technic, I decided to take up photography as a profession, much to the horror of some of my friends, who declared, 'There is a perfectly good college education gone to waste!' (And, by the way, what a commentary on the profession! To the

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MISS MABEL BEDDOE
BY NORMAN BUTLER
NEW YORK

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general public the photographer is a kind of necessity at Christmas and weddings, but otherwise a nuisance; and there is only one kind of photography—the kind that any fool can do if he has a camera and a few bottles of 'acids.' The public knows no chemicals but acids!)"

In composition Mr. Butler's work is based, not at all on pattern, but upon the massing of lights and darks. His compositions are studies in light and shade, usually strong, concentrated light and



"BABY CARVER"
BY NORMAN BUTLER

deep, transparent shadows, more after the manner of the Dutch painters than the Japanese, whose flat decorative effects are the basis of much modern art photography. Most of them are so simple that you wonder at first what there is in them that critics admire. But as you study the prints you realize that it is their very directness, simplicity, apparent artlessness that give them their charm and place them far above the usual "photo-studio" type of thing.

It is the ability to see effects and record them quickly that is one of the chief assets in portraiture, and this ability Mr. Butler has above all other photographers that I know. He catches the passing moment, the fleeting expression. And yet would you believe that some of his most spontaneous-looking things were given an exposure of from fifteen to thirty seconds? How many operators can get a sitter to hold an animated expression for anything like that length of time? Yet it is an everyday occurrence with Mr. Butler. This is where the personality of the operator counts above mere technical skill, or shall I say that it counts as the chief element in technical skill when it comes to portraiture?

Turning attention to a few individual prints, the portrait of Mr. Lusk is interesting because of its being so far removed from the conventional treatment given almost invariably to portraits of elderly men. The old man with white beard and hair, deep character lines, and all the rest, too readily suggests the story-telling interest, and few portraitists es-



"THE FAN"
BY NORMAN BUTLER

cape the temptation to put something of this into their studies of old men. Here is a portrait pure and simple—easy, natural pose; unusual composition; quiet and dignity—altogether a fine bit of character rendering.

The portrait of the boy in sunlight "Bobby" is a charming solution of a very difficult problem. Given a lively boy, a comparatively slow lens (Mr. Butler uses one of the Smith semi-achromatic lenses, which has to be stopped down consider-

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"THE JAPANESE SCREEN"
BY NORMAN BUTLER
NEW YORK

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ably in such strong light as we have here), and actual sunlight, which, paradoxical as it may seem, requires generous exposure as compared with diffused white light—given these conditions, and any photographer would say the difficulties are almost as great as possible. Yet the result has every element of beauty—delicate shadows, beautiful quality in the high-lights, a real sunlight effect, a happy expression on the child—a print filled with happiness and light. In passing it may be said that a longer-focus lens would have improved the perspective a trifle. There is a tendency to abruptness here that is a little unpleasant once attention is called to it.



"IMPRISONED"
BY NORMAN BUTLER

The head of "Baby Carver" I regard as one of the finest baby head studies I have ever seen. It is spontaneous, unaffected, pure babyhood shining out of those eyes, the little baby wonder and innocence—all are there. The picture was taken exactly as shown in the cut, and is not an enlargement of the head from a figure composition. The print is a "gum," as smooth and delicate in texture as a platinum.

The print of the "Soldiers and Sailors Monument" is a "gum." It is soft and sketchy, giving the impression that it might have been done in pastel or crayon. Yet it is photographic; in fact, neither negative nor print has been retouched or manipulated in any way. It is a fine illustration of the range of possibility in photography as a means of expression.

Mr. Butler feels a certain appropriateness in strong, concentrated lighting for men's portraits. This is shown in the portrait of Mr. George W. Cable. There is wonderful virility and depth in the original print—a platinum—quite in keeping with the character of the subject.

The dancing figure Mr. Butler has made an object of special study. His photographs of "Lada" show what can be done in preserving the sense of motion in photography. A snap-shot of a figure in motion, as Mr. Butler pointed out to me once, rarely gives it, difficult as it is to explain why. There must be a certain feeling of abandon, a sense of the thing not having been posed; yet a snap-shot is somehow too abrupt, too much as if the motion had been arrested suddenly. He catches the *spirit* of the dance, which, after all, is the important thing. In fact, in all his work his motto seems to be "interpretation," not "delineation."



"BOBBY"
BY NORMAN BUTLER

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FRAMING THE PHOTOGRAPH

By J. HORACE McFARLAND

THE framing of a photograph is oftentimes a difficult problem. It should always be remembered that the frame is simply a mechanical accessory to the picture, providing a means of holding the objectionable but necessary glass which protects the face of the print from dust and soiling. It may, under intelligent treatment, become also an artistic accessory, enhancing the beauty of the picture; and it may, and very frequently does, detract greatly from the intended effect if improperly considered. In its simplest form it is absolutely unobtrusive, serving only as a protection. In its best form it very acceptably supplements careful work in trimming and mounting, tending toward the homogeneous and satisfactory whole. In its worst form it fairly howls with disorder and inappropriateness, as may be witnessed in its connection with the department-store crayon enlargement, supplied free to the victim who will purchase the frame! In these cases the frame is the main object of consideration, the thing or print—seldom enough truly a picture!—framed being purely incidental and secondary.

A properly mounted and framed picture of any sort, from the smallest photograph to a great battle-scene in oils, appeals to one as a whole, without the predominance of any of the subsidiary parts. It is just as with dress—the best-dressed man is the one who makes no obtrusive impression as to clothes, but meets the eye as a satisfactory figure. We do not specially note or remember as to the shape and color of the garments when they have done their duty of presenting the man in the best light.

I have seen many fine pictures, photographs as well as the productions of the brush, which have powerfully impressed me, but of the framing of which I have only a slight remembrance. These were well framed, and the message of the picture was not disturbed by its accessories. Conversely, I remember going to an exhibition in New York of a number of water-colors of Venetian scenes and life by F. Hopkinson Smith, the first impression of which was most disagreeable, because of the glare of the wild gold mats which intervened between the pictures and their frames. Questioning an authority, I was curtly informed that "water-colors *always* have gold mats and gold frames, of course!" Pushing the inquiry, I got more "sarse," but no logical reason. It was simply another case of following a style once set, most suitable, perhaps, when first worked out in connection with a subject full of strong color in heavy masses, but very inappropriate for the delicate treatment of the versatile "Hop" Smith.

Later on I had a chance to test my own theory as to the mounting and framing of a very perfect reproduction from one of the best of the Venetian pictures, and, as I look at it daily, no doubt appears as to the propriety of omitting both the "gold" mat and the golden frame. The foreground is sunlit, shimmering water, giving lovely olive shadows; the sky is the deep blue of Italy, with fleecy white clouds. The deep olive mat leads off to a dark greenish oak frame, with just a faint trace of gold to relieve and brighten it. There is both harmony and contrast, and the result is an agreeable whole, with nothing to jar on the color nerves.

The framing of photographs rests on just the same principles as the mounting does, and all I have said as to the use of harmony or of contrast in relation to the mount applies perfectly to the framing. If we trim ever so carefully, mount ever so appropriately, and frame improperly, the effect of the whole is poor—the picture does not fully deliver its message.

Very many tradesmen who make frames upon order have no sort of knowledge as to the principles involved, and hit upon good results occasionally by chance only. The most of these think that gilt frames are the sum of elegance—the more gold the more elegance! Of

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late years there have been introduced a very great variety of frame mouldings, including many in black and in gray, which make possible superior effects. If one will keep in mind the necessity for harmony, selection of a proper frame material will not be difficult.

For black-and-white photographs the black and gray oak mouldings are particularly good. If the combination seems sombre, or dull, a narrow silver lining next the print will do wonders. Many good mouldings have the necessary trace of silver incorporated in them. For some prints nothing is better than a single dull silver strip, barely a half-inch wide; this doing best when set against a rather wide expanse of dark-toned mount.

As previously noted, the fashion of using a proportionately very wide black oak frame close up against a platinum print is going out. Framing "close up" is admirable sometimes, and abominable when done merely as a fashion without reason. I think every fashion has had its rise in some rational use, and its abuse is slavish following, without reason. Be that as it may, we can use the close framing method or not, as seems to best fit the subject in hand, not because this or that prominent worker has adopted it. Large heads, or half-length portraits in the Rembrandt lighting, seem to demand this close framing, and the effect is better when the moulding is deep—curving in toward the picture so as to stimulate distance or depth. It is almost essential for successful close framing that there be no great difference in color and tone between frame and picture. Strong color contrasts will be ruinous.

It is seldom that a picture abounding in light looks well when framed "close up;" the contrast is too violent and obtrusive.

For the browns of silver printing-out papers, of toned platinum, and of the gum-bichromate fad of the day there are appropriate mouldings accessible either in tones of oak or in the natural walnut. With some care, black frames may be used also, and occasionally a dark green moulding will contrast very acceptably. A brown carbon is matched by a darker brown-stained oak, and, if the picture be of any size, a trifle of gold will brighten it, just as silver does the black frames for platinum and bromide. A frame entirely of gold moulding is seldom truly satisfying for any monochrome, the yellow hue of the precious metal seeming to find its best framing use in connection with broad masses of color, either in oil, water, or other polychromatic medium. The "exquisite" $2.98 frame of dubious gilt which surrounds and fortunately extinguishes (mostly) the high-class cabinet enlargement, "crayoned by hand," as provided by the big store as a premium for the purchase of a dollar's worth of soap, sugar, or muslin, is a thing by itself, amenable to no art principles. It serves a most useful purpose as a dreadful example, however.

MAKING NEGATIVES OF LINE SUBJECTS[1]

THE making of a black-and-white negative is frequently looked upon as being one of the simplest processes to carry out. That is a great mistake; and this evening I propose to consider in detail the whole range of the operations which go to make such reproduction work successful.

[1] A lecture before The Royal Photographic Society of Great Britain by the President, Mr. John H. Gear.

In the first place we have to consider our copy. This varies very considerably. We may have one which will produce a negative without much difficulty, but such a copy is rather the exception than the rule. An original which looks black is frequently found on developing the plate to have been not actually black. Printers will sometimes put into black ink a bronze-blue in order to make the black look more attractive. There is

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also the difficulty arising out of the color of the paper. Papers vary considerably, containing often a distinctly yellow tone, and it is astonishing, on comparison with white paper, what a vast amount of difference it makes in respect to the production of the maximum amount of opacity in the negative. Then, again, we frequently find copies with blue lines as well as black. The ordinary plate may not answer the purpose at all, and an orthochromatic plate may be necessary, also a light-filter. I have sometimes had to use a light-filter of a multiplying value of something like forty times, with blue lines upon a paper with a slightly yellow tint.

Having the copy, we have to consider its illumination. It is essential that the light shall fall equally upon the copy, and give us no unequal reflection. It is necessary also that the light should travel in the direction of the axis of the lens as much as possible, to prevent any grain in the paper being made manifest; and, further, we should not have an abundance of light coming from all quarters. For the illumination of a copy I prefer artificial light. Those who have the advantage of a pair of arc lights have a ready means of illuminating their copy practically as they wish; but, failing this, I still prefer incandescent gas or the ordinary electric light to daylight.

In a copying camera upon a sliding base, with the easel at right angles, there is no difficulty in obtaining the absolute coincidence between the planes of the plate and the copy, but without it, as everyone knows who has attempted to reproduce a square, flat object, there is great difficulty in obtaining an absolute equality of the planes. Where there is no copying facility available a little arrangement may be made use of as follows: If you draw a right-angle cross upon your focussing screen in the center, and make a cardboard ring that will fit the lens, putting a pair of black threads, also at right angles, across the front of the ring, then if in the center of your copy you lay a mirror flat, you will find that the difficulty of obtaining the plane between copy and plate is not nearly so troublesome a matter. The mirror, if flat upon the copy, will reflect the cross lines on the lens, these cross lines acting somewhat as a fulcrum; therefore you are able to focus the reflection of these lines in the mirror upon the focussing screen, and when the reflected image of the cross threads superimpose the cross drawn accurately upon the focussing screen, there will be no great error between the plane of the copy and that of the plate, certainly a nearer plane between copy and plate than is obtained by trial and error or by ordinary measurements.

The lens that we should use is preferably of long focus; it should be of much longer focus than one would use to cover the size of plate if employed for ordinary work. However excellent the qualities of lens may be, there is a distinct advantage in using a small stop for reproducing fine lines. A large angular aperture will not give you the crucial definition a small one will. *F*/4.5 or *f*/6.4 is far preferable to a larger stop for this purpose by reason of the acute pencils of light which you obtain not being so scattered on passing into the film. Incidentally I may say, however, that if you are not perfectly certain that your lens has been properly corrected for spherical aberration it would be very unwise to reduce the diaphragm from a large aperture to a small aperture without going down in stages. If there is any spherical aberration present in the lens, you will not obtain the definition with the small stop which you had hoped to obtain.

Then we come to the plate. Obviously it is necessary to have a slow plate with a fine grain. Many plates on the market answer the purpose, and the process plate is useful, but I have usually employed a slow lantern plate. I will not specify one as better than another, but the one I have found specially serviceable is the Imperial Special lantern plate, both for negative-making and for positive-making also. I find it will give sufficient opacity, and is extremely clean in the lines.

Coming to the exposure, it has been often stated that in making an exposure for a black-and-white copy it is well to err on the "under" side. As a matter of fact, you have very little latitude indeed in a black-and-white exposure. You have to aim at an exposure which will give you

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the maximum amount of deposit for the ground with the minimum upon the lines. The exposure is obviously short, but it must be sufficient to obtain the maximum opacity without producing any very great deposit over the lines. The plate necessarily is backed, and backed with a mixture of an index of refraction equal to that of glass; merely covering the back of the plate with some substance will not answer for this work.

A developing solution should be used which is adjusted to give the greatest amount of opacity without any risk of chemical fog. A hydroquinone developer, therefore, is generally preferable for the purpose. A quite simple two-solution developer which I generally use is made up as follows:

I

Hydroquinone	1 oz.
Potassium metabisulphite	1 oz.
Potassium bromide	1 oz.
Water	to 20 ozs.

II

Caustic potash	2 ozs.
Water	to 20 ozs.

By taking equal parts of each and two parts of water you have your solution ready mixed for development; it should not be used at a lower temperature than 55° F. Development must be carried on until you have reached the maximum opacity possible; when that point has been obtained there will probably be some deposit also over the lines. It ought not to be much, and will be subsequently dealt with.

After development with hydroquinone, wash the plate more than is usual with other solutions before the fixing to prevent an opalescent effect in the film.

I come now to fixation, which is very important in view of subsequent operations. It is frequently looked upon as sufficient to fix the negative by laying it in the fixing bath for five, ten, or fifteen minutes, then taking it out transparent and assuming the fixation is complete. That is only the first stage of fixing. When a negative is placed into a solution of hyposulphite of soda of suitable strength we have then hyposulphite of silver formed in the film. That salt can be decomposed, and will be decomposed if there is not an excess of hyposulphite of soda attacking the film and attacking it at an early stage. With a plate that lies flat in the dish, and is not rocked from the time it is put there to the time it is taken out, the chances are that it is not perfectly chemically fixed, and never will be. The hyposulphite of silver has to be changed into a double and a readily soluble salt. If there is not an excess of hyposulphite of soda, then we shall have a double salt formed in the film, which may be more or less colorless, but it will be an extremely insoluble salt. It may not seriously affect the negative in the ordinary way when dried and finished, but there arises the question of reduction and intensification. How frequently do we hear people say, "I do not like to reduce or intensify negatives for fear of unequal intensification or staining." The reason is, if such a result does occur, that they did not fix their negatives properly. (Mr. Gear, to illustrate his point, showed by means of the lantern the reaction due to the formation of hyposulphite of silver into the soluble salt, and also into the insoluble salt.) Continuing, he said, I trust that this has impressed upon you the need for care in the fixation of your negatives. The film, of course, should contain metallic silver. You cannot say "pure metallic silver," because generally there is a small quantity of sulphur present, but practically there is metallic silver in the gelatin. If we have another compound in addition to the silver, it is reasonable to expect trouble and staining.

It is necessary to carry the operation a stage further—*e. g.*, washing. The soluble salt formed in the film is readily washed out in water, and there the actual fixation is obtained, also the elimination of the fixing salts. For a black-and-white negative, and for all negatives, as a matter of fact, which have to be reduced—I use the word "reduced" perhaps incorrectly, but it is a common term in use among photographers—ferricyanide and hyposulphite of soda is a convenient bath for the purpose, and it is, perhaps, reasonable for the photographer to argue within himself that, as he is using in the fixing bath a hyposul-

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phite of soda, there is no need for him to wash the plate. That is true so far as the hyposulphite of soda is concerned which is in the film, but it is very necessary indeed to wash out the soluble salt before you commence. Negatives that are reduced with the ferricyanide and hypo-reducing bath need not show any yellow stain, and will not do so, if the negative has been perfectly fixed. The negative should have at least ten minutes under the tap (the water running straight upon it) before reduction is commenced.

For the reducing bath I use hyposulphite of soda 5 ozs., water to 20 ozs.—that is the strength, not the quantity—to which I add three or four grains of potassium bromide per ounce. The ferricyanide of potassium then is dissolved—preferably freshly dissolved—by placing the bright ruby crystals in a little water, and this is added to the hyposulphite of soda solution until it becomes a deep orange color. It is difficult to see that by artificial light, but by daylight, of course, there is no difficulty. For a black-and-white negative the reducing bath should be much stronger than for the continuous toned negative. In the parlance of the line worker we now "cut" the lines, and the stronger the solution, within reason, the more efficiently and quickly the result is obtained. The reduction must be continued until the lines are absolutely free from any silver. That can be readily judged by holding the negative over a white surface illuminated slightly from above. If any silver be left the lines will be in a worse position subsequently than when one started. One must go on until every atom of silver that may be upon the lines, whether produced as the result of fog or reflected light or whatever it may be, is taken away completely. The effect of this will be to reduce the ground work also considerably, but we shall get that back again presently.

After reduction the negative then requires washing in running water for at least fifteen minutes. Then we have to regain the opacity of the ground work, and the first operation by which to obtain that is to bleach the film through with mercuric chloride solution:

Mercuric chloride . . .	100 grs.
Potassium bromide . . .	100 grs.
Water	to 20 ozs.

The film is bleached right through to the side next the glass, and then it must be washed. Immediately it is placed under the tap the surface of the film should be wiped over with a pad of cotton wool to remove any free mercury which may be left upon the film surface. That should be washed under the tap for another fifteen minutes, and then to darken our negative we must obtain a silver-cyanide solution. To make your silver cyanide, take 5 ozs. of distilled water, in which you dissolve 100 grains of nitrate of silver. You then take a second 5 ozs. of distilled water, and dissolve in it 80 grains of cyanide of potassium. That second 5 ozs. you put into a 10-oz. bottle, and by adding the silver solution slowly to that solution in the bottle you obtain a flocculent precipitate. That, however, will quickly redissolve. You add a little more of the silver solution and the same thing happens, and so on, until you find that this flocculent precipitate will not redissolve, but is thrown down at the bottom of the solution as a precipitate. There must be an excess of silver in the solution to prevent the cyanide causing some reducing to take place. If you happen to have a common sample of cyanide of potassium you will find that you will get that deposit thrown down in your solution before you have used the 5-oz. solution containing nitrate of silver; but if you have a good sample of cyanide of potassium you may find it necessary to add a few more grains of silver nitrate to obtain the necessary deposit at the bottom of the solution. The bleached negative is then flowed with this solution, and a very great increase in the opacity will readily be obtained. The action must be allowed to continue until it has darkened to the glass side of the film, but immediately it has reached that stage the action should be stopped, otherwise the cyanide may, and probably will, cause some reduction. The film is then wiped over with cotton wool, given ten minutes' washing under the tap, thus completing the production of a line negative.

I have given you a *résumé* of the pro-

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duction of a black-and-white negative by dry-plate method, as there are few who have the convenience or the knowledge to work the wet-plate process, but the dry plate cannot be compared for black-and-white line negatives to wet collodion; with wet collodion it is possible to reduce down and to build up in a much freer and more effective manner. If it is true that an ounce of practice is worth a ton of theory, my remarks may, perhaps, prove useful, for they are entirely based upon a practical experience of black-and-white negative work.

PHOTOGRAPHING FOR COMMERCIAL PURPOSES

By ROBERT F. SALADÉ

FOR the professional photographer who is willing to plan new ideas in his art there is a vast, fertile field as yet scarcely touched. But, like every other field of human endeavor, this "virgin soil" must be plowed, sowed, and carefully attended to before the harvest can be reaped.

This rich "ground," which offers unlimited possibilities for the enterprising master photographer, is the making of art photographs for advertising and general commercial purposes—not plain, everyday pictures, possessing only ordinary interest, but unique, original subjects that have a human appeal, and which also have the much-talked-about "selling punch."

For example: A splendid church has just been completed, and its beautiful architecture is pleasing to the eyes of everybody in the neighborhood. This inspires an alert photographer. He takes an unusual photograph of the edifice—not a commonplace view, but one taken through a row of green trees on the other side of the avenue, diagonally across from the church. The finished picture shows the fine lines of the building through a screen of tree trunks, leaves, and branches, adding "romance," "poetry," and "artistic atmosphere" to the subject. The photographer applies prints of different sizes to harmonious mounts, which, of course, enhance the appearance of his production.

Then, with the finished work, he calls upon the pastor of the church and suggests to the clergyman that many parishioners as well as others in the neighborhood would like to have copies of the photograph. The photographer also mentions the fact that the view would form an elegant post-card subject, and that active members of the church societies could sell hundreds of both large and small copies of the photograph throughout the district, thus realizing a profit on each print sold that could be appropriated to the church's revenue.

The pastor has had an ordinary photograph of his church taken, but this new one is so far above the other in tone and quality that the pastor orders several enlarged reproductions for his home and for friends, also he orders some post-cards. Later, he takes up the commercial proposition with certain members of his congregation, and the final result is that both the church and the photographer are rewarded financially.

Now, on the avenue near the church is a large house for sale. The photographer takes an interesting picture of this house in such a manner that a front view of the beautiful edifice is included. The print applied to an attractive mount, the photographer hastens with it to the real-estate man who is trying to sell the house.

"Put one of these in your window," suggests the photographer to the conveyancer, "and mail a copy to a dozen of your best clients. The view of that fine church included in the illustration of this house psychologically demonstrates

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the high character of the neighborhood to prospective home-buyers."

The real-estate dealer saw the selling point, ordered the photographs, and eventually sold the house through exhibiting them. Then, the party who bought the home liked the picture so much that he ordered a smaller one taken for post-cards to send to his friends.

Up in Pennsylvania a professional photographer had a little dog which could perform many clever stunts. Whenever he had nothing else to do the photographer would take pictures of his dog doing unique tricks. Soon the photographer had several dozen unusually interesting pictures; then he hit upon a big idea: He first had the subjects copyrighted, then sold the series to a large manufacturer of advertising calendars, retaining the privilege of selling the views for other purposes. Another set sold easily to a large pictorial magazine. Still another set sold to a manufacturer of fine dog-collars, who wanted the pictures for use in connection with advertising literature. Recently a publisher of children's books purchased a set of the pictures for use in a little story-book about dogs.

Many national advertisers are literally hungering for unique photographs illustrating their wares in a new and better way. Suppose, for instance, that a good photographer would at times take unusually interesting views of historic buildings, famous institutions, fine churches, colleges, schools, etc.: Pictures that have been studied with the eye of an artist—twilight pictures, "misty" pictures, pictures that show "light and shadow." Not only could such pictures be sold at profitable rates to the better-class magazines, to people interested in the buildings in a special way, and often to people who visit or attend these institutions, but there is still another market for the photographs—the advertising field.

The photographer makes notes of what furnishings these buildings contain; what make of heating apparatus; the kind of machines therein; the brand of office furniture, etc. Then the photographer brings his pictures to the attention of the manufacturers of machines and other things in the buildings. He visits the Gem Heating Company, for example, and remarks:

"Isn't this a beautiful illustration of the So-and-so college? Notice how the fine architecture is shadowed. Well, as you know, your heating apparatus is installed in that building. Mention this important fact in your advertising—have a good half-tone plate made of this photograph for your catalogues and booklets. Demonstrate to prospective patrons the high quality of customers which are on your list. A picture like this will help to sell your product."

Such a selling talk will sell the photographs in question, and will lead up to additional business. When exhibiting pictures for special purposes, however, the photographer should be exceedingly careful that the work is as near humanly perfect as possible. No defects should be visible, and the mounts should be selected with an intent to have them symmetrical and of a quality that will reflect the good work and values of the print.

YOU can't give goods away unless you let people know your intentions. This is for the man who says he can sell his goods quicker by cutting prices than by advertising.

A COSTLY window display that doesn't make a sale is as valuable as an automobile without gasoline — it lacks power.

PROBABLY more men would advertise if they were forbidden.

BURIED hopes require deep graves.

IT takes more effort to sell a poor article at a small profit than a good article at a large one.

A PLEASED customer may not talk much, but a dissatisfied one always talks too much.

EVEN perfectly cold cash will burn a hole in the pocket of a spendthrift.

AN advertisement should not be so thin that its ribs show through.

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5. LAUGHING GIRL
FRANZ HALS

6. BURNE-JONES
C. F. WATTS

11. MRS. FERGUSON
RAEBURN

7 ALEX. DUMAS
BONNAT

8. A NOBLEMAN
FRANZ HALS

3. JAMES WARDROP
RAEBURN

9. MRS. BOSWELL
RAEBURN

10. THE LESLIE BOY
RAEBURN

12. STUDY
DR. SPITZER

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THE FULL-FACE AND THREE-QUARTER VIEW

PART I[1]

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

THE full-face view, in which both sides of the face are perfectly symmetrical, and in which the ridge of the nose is seen as two lines and not as one diagonal line against the cheek, has been used to good effect by the Madonna painters of old and also by many of the portraitists from Rembrandt to the present day. Reynolds was particularly fond of it. It does not lend itself quite as easily to photoportraiture.

The full-face view with the head perfectly erect always looks a trifle stiff, and only a clever management of accessories and background can render it graceful. It depends too much on careful composition for ordinary use. If rightly handled it is dignified in appearance, and the larger the head the easier it is to manage.

Another difficulty is the absence of strong shadows. A full face is generally seen in an even light. Of course, one can concentrate the light on the forehead and leave the rest in shadow, and light it from the side or from below; but even then the contrast of light and shade is less pronounced than in three-quarter views. For it is the nose that is the great shadow maker (I almost said trouble maker) in chiaroscural composition. In the full-face view, so long as it is seen under ordinary light conditions, an even light distribution is the principal characteristic.

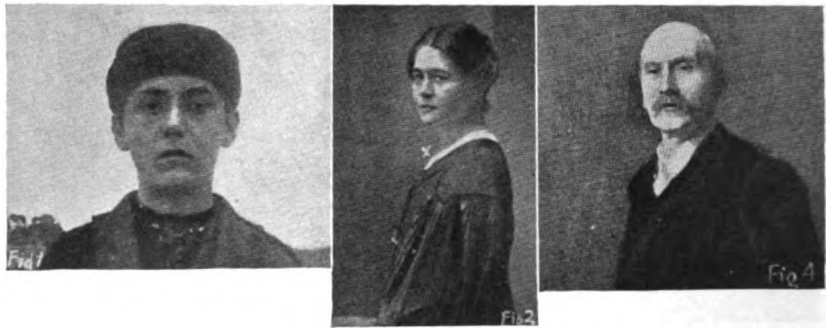
If you see a face out of doors against the source of light (Fig. 1), the face is darker than the background, but the values of the face are all seen in middle tints without strong high-lights and shadows. The same relation of values exist, only *vice versa*, light against dark, if a face is seen under the normal light conditions of an interior (Fig. 5). There is really no strong shadow except under the chin and sometimes, as in this case, under the nose. The Franz Hals picture is perfect of its kind and typical of a good full-face view. The slight inclination of the head takes away all stiffness and makes the figure more natural looking.

It is wonderful how much depends on the inclination of the head. The head carried perfectly erect is at 90 degrees. The Rembrandt head is at 80 degrees. A few degrees make a world of difference, and the most perfect poses are to be found in the section of 80 to 90 degrees. Nos. 3 and 7 show this; they are both taken at about 85 degrees. The head of the Franz Hals woman, mentioned above, is already tilted over a trifle too much for a portrait, while No. 10, "The Leslie Boy," by Raeburn, taken at 60 degrees, shows about how far one can go in inclining a head. It looks pleasant enough for a child, but would hardly look natural or graceful for a full-grown man or woman. There may be some who will dispute this, and, of course, there are exceptions, but I am certain that if my readers would examine the works of any portrait painter of note they would find my statement correct. The head is never seen at a lower angle than 60 degrees. I remember a portrait of Goya, by himself, in which the head is thrown sideways to an alarming degree. It looks eccentric, and everyone feels that it is no sane pose, and yet the head is only seen at 65 degrees.

Vague charcoal lines in a background, indicating 80 to 90 degrees, would afford ample opportunity for the study of posing a head. Try it; you will find it profitable and learn a good deal from such experiments. The difference of one degree makes an entire change in the composition. The slightest tilt is noticeable, and the slighter it is the more natural it really is. It is easy enough

[1] From "Composition in Portraiture."

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1. By HUGO ERFURTH 2. By C. RUF 4. By W. Q. ORCHARDSON

to accentuate it by some vertical line arrangement in the background.

It would be desirable if in all bust portraits the management of the body, the lines of the shoulders and arms would be kept as simple as possible. They rarely explain themselves, as, for instance, in the Orchardson portrait (Fig. 4). In most bust portraits which show a good part of the upper body one does not know whether the person portrayed is seated or standing. A good portrait should never make one guess at things.

In the Orchardson portrait one realizes that the man is standing. The head is thrust forward in a way that indicates a standing position. In the same way you feel that Bonnat's Dumas is standing, and Franz Hals' "Nobleman" is sitting. The elbow carries out the idea. But look at the average of bust portraits (photographs, I mean), and you will be utterly at loss. It is much simpler and much more beautiful to treat the body as we see it done in Figs. 3 and 6. In them the face is everything; nothing else counts. But how marvellously characteristic the faces are! I wish photoportraiture would steer toward such a goal—the face in clear tints, seen in simple lighting, in a natural attitude, and everything else sacrificed to a happy expression of the face. And there is no modern portrait painter of whom photographers could learn more than of Watts.

The three-quarter view can be divided into four phases: first, where the view is almost a full-face view and the turn of the head is hardly noticeable, as in pictures 3 and 6; second, where the line of the nose begins to be seen sharply against the cheek, as in pictures 7 and 10; third, where the line of the nose touches about the middle of the cheek, as in picture 9; and fourth, where the line of the nose touches or protrudes over the outline of the cheek, as in pictures 8, 11, and 12. The best way to study this is to take a plaster-cast bust and turn it slowly from one side to the other.

I am of the opinion that the second and third kinds of view are the most popular ones. They offer the best chance for light-and-shade composition, and the human face is seen to the best advantage. It is the most interesting pose the average human face can assume. It shows everything a face contains in regard to line construction and modelling. And it has the charm of contrast, of decided high-lights and deep shadows. Of course, in photography there is the difficulty of making the shadow side look transparent and of not losing too much of the form. It is not in my province to give any hints how this may be accomplished (there are so many other men more able to do this than I), but I have observed that this shortcoming is no hindrance to the popularity of these two poses. Nearly eighty per cent. of all photographic portraits are made in that fashion, and for that reason I shall return in Part II to these two views and try to dwell on all the manifold variations possible to them.

The three-quarter view which is nearest to the full-face view is the most

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artistic, as it is the most quiet one. It is least conducive to mere striving for effect, and always looks natural. It is less severe than the full face, as the perfect symmetry of the features is broken. The most ideal lighting for this view, I believe, is shown in the Watts picture, namely, sideways from above. As soon as the lighting is too much directly from above (Figs. 3 and 4) the nose loses some of its strength and the shadows under the nose and eye and at the corner of the mouth are apt to become too decided. It is effective in painting, as the differentiation of values can be produced by color. In photography it is more difficult to make the light line of the nose tell against a light cheek.

The more diagonally the line of the nose strikes the narrower side of the face the more picturesque the composition becomes. Also the eyes, so far as drawing is concerned, are seen best in the full or nearly full-face view, the nose looks better in perspective, and the mouth better foreshortened. There is a sufficient variety of lines in these poses to render almost any face interesting.

Not the same can be said of the fourth kind of view. As soon as the point of the nose gets too near the outline of the cheek, as seen in No. 11, the line arrangement becomes a trifle confused. We are not used to seeing people that way. There is too much drawing, and we are, as a rule, not familiar enough with it (even where faces we know well are concerned) to make it look natural to us. This is particularly the case with women. The Dutch woman of Dr. Spitzer is surely no beauty, but it would be quite easy to get a more favorable likeness of her. Dr. Spitzer apparently wished to accentuate the ugliness, a peculiar ambition of many of our realistic painters.

A strong physiognomy, like Dumas by Bonnat, looks well enough, but we must not forget that a three-quarter view, as soon as the tip of the nose protrudes over the outline of the cheek, is almost a profile. This view in particular is only applicable to men with strong, clean-cut faces, but not at all suitable for handsome women or children. The best proof, perhaps, is that Franz Hals, in all his elaborate group compositions of guilds, committees, and riflemen associations, in which ten to twelve personalities or more are depicted, never employs the extreme three-quarter view for more than one.

HOW TO AVOID STRESS AND ABRASION MARKS ON BROMIDE AND GASLIGHT PAPERS

THE opinion of those qualified to judge is that bromide and gaslight papers are undoubtedly the most popular printing media among amateur photographers. Records indicate that the consumption of bromide paper alone is probably as great as all other printing processes put together. Unfortunately, in most makes of paper there is always a tendency for stress marks to appear. Every user of bromide and gaslight paper is aware of this trouble, although at least two firms have introduced paper that is free from the defect. Gaslight papers appear to be more prone to stress marks than bromide papers, and different batches of the same maker will frequently exhibit them in greater or lesser degree.

The stress marks, which take the form of dark streaks and hair-like lines and markings, appear most frequently in the glossy and smooth-surface varieties of paper. They will usually be found to occur on the white margins of prints, and will generally be observed in greatest profusion on the light or delicate portions of a picture, where their presence

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is most objectionable. These stress marks appear to be due to abrasion of the surface, and while it is not quite clear why they should arise, they can in almost all cases be removed by rubbing the dry print with a pledget of cotton-wool wetted with methylated spirit. Various reducing agents in a dilute form have also been recommended for their removal, but in the method hereafter described the principle of prevention rather than cure has been followed, and from exhaustive experiments with a number of varieties of bromide and gaslight paper there appears little doubt that it offers an efficacious remedy for the avoidance of this annoying fault.

For example, a print made on smooth matt bromide paper was exposed beneath a vignetted negative, leaving a broad white margin all round. The print was then cut in halves, and before development the two pieces were rubbed vigorously together, film to film. One half was developed in a normal amidol developer. This produced a perfectly good print of half the negative, indicating that exposure was correct, but the white margin was covered with a mass of dirty markings produced by the vigorous friction the print had received. The other half when developed presented clear white margins with entire freedom from stress marks.

The magic that produced this remarkable result was merely our old friend hyposulphite of soda, and, moreover, used as an addition to the developer itself.

On many previous occasions the addition of hyposulphite of soda to the developer has been advocated for various purposes. But in this instance there is a deliberate departure from the well-considered advice of the text-books, wherein one is counselled to avoid contamination with hypo during the process of the development of bromide and gaslight prints.

This addition of hypo appears to produce a similar result with most of the developers advocated for bromide and gaslight papers, and our experiments have included amidol, azol, metol-hydroquinone, and rodinal. The first-named was taken as the standard, and the formula used was:

Amidol	25 gr.
Sulphite of soda	300 gr.
Water	10 oz.

A few drops of ten per cent. bromide of potassium solution were also added. This formula was used to develop the first half of the print mentioned above, and the same formula, plus six to ten grains of hypo, was used for the second half, bringing about the entire abolition of the stress marks. It would seem that practically any published developing formula for bromide or gaslight paper can be used in the manner suggested, and our readers should experiment on these lines for themselves.

The amount of hypo that can be added with safety to the developer without unduly slowing it or producing any bad effects appears to be fairly considerable; as much as twenty grains was added to the developer with no other effect than the removal of the stress marks. Beyond that amount the action became slower, and subsequent experiments showed that if there was any tendency to underexposure or for the developer to be exhausted, stains were liable to arise.

Given fresh solution and a properly exposed print, however, the presence of hypo is a distinct gain to the developer for bromide and gaslight prints, and bright, clean results can be secured every time. A careful comparison between the tones and gradations of the two halves of a print treated as described above showed no appreciable difference. There was also very little difference, if any, between the times of development of the two halves, although the prints developed with hypo in the developer took a trifle longer before visible developing action commenced.

The advocacy of this method of avoiding stress marks in bromide and gaslight paper must not be taken as a general direction for the encouragement of careless and dirty work. Let the worker who adds hypo to his developer for a definite purpose deal with it as conscientiously as though it were still forbidden. Although it is demonstrated

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that hypo is not taboo, as heretofore, splashing the fixing-bath into the developer or passing prints from developer to fixing solution, and then continuing developing with unwashed hands, is still as likely as ever to be productive of unforeseen troubles.—*Amateur Photographer.*

PHOTOGRAPHY AS A PROFESSION FOR THE ARTIST

THE medium of photography has missed its place; it has never occupied its rightful position among the recognized mediums of art. Most people think that art is one thing and photography another, and after all it is one of the most beautiful of mediums to express the more subtle and delicate side of nature's effects.

Who is the man who is facing these difficulties and is determined to demand that it should take its rightful position?

It is more for the professional man to see photography placed in its right position, for he is so intimately connected with the source of demand, and if he will he can, to a great extent, dictate rather than be dictated to. The scientific photographer has done his part and made it one of the greatest factors in science. One is inspired to see men of solid art training making photography an essential medium in the truest sense of the purest art. So many have thought that nature is art, but it is not so; art is man's conception of nature, which, of necessity, must pass through his brain and be definitely recorded by one of the 'graphs—oilgraph, watergraph, etchingraph, or photograph.

Until a worker has freed himself from the bonds of the process and technic, and so mastered its principles as to make the process subordinate to himself, he can never expect to obtain, attain, or retain any inspiration that he may wish to express.

Strange to say, it seems that photography started the wrong way round. I mean by this that, with few exceptions, it was originally used or misused for trade and scientific purposes, and the man in the studio was working a mysterious process in the eyes of the world, and he traded upon this. As soon as the mystery was divulged and became common property, the photographer had to put his mind to something higher: thus we found in that transitional stage so many perhaps extravagant modes and styles. But now it is settling down in a saner mood, and we are not so worried about the process. The worker is endeavoring in his output to show distinct individuality, either in a peculiar technic or certain get-up; and perhaps a man's works are known by his treatment of a peculiar or distinct class of subjects, whether it be in the treatment of landscape, children, architecture, seascapes, or other class of work.

There is a dominating principle for each and all, although every worker's disposition cannot be expected to yield the same subject in the same fashion. It is here that we hail with delight a number of workers who are practising as professionals. Are not they the men who, with their works, will give photography its right place, and who are acting as pioneers to educate the public to appreciate something better than the usual thing, the conventional professional photograph?

A question we have to ask ourselves repeatedly is: What makes some pictures live? Take the trouble to go through a family collection of portraits: how few there are that really live, from a pictorial point of view! On the other hand, take a few Academy catalogues, or, better still, run through one of the portrait galleries, and endeavor to realize why those pictures live, and are likely to continue to live, as examples of art and records of real life, in spite of the

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ever-changing fashions of garments. Evidently the training the portrait painter had enabled him to discover the secret that would make his pictures live in the minds of all generations. He acquired a natural intuition to eliminate all unnecessary detail—not to avoid painting detail, but by the very careful manipulation of massing his lights and shadows, and being exceedingly careful that the pattern and also the expression play their parts in the complete picture. All this is gradually being realized by the worker of the camera.

The greatest advantage the painter has over the photographer is that the painter, in most cases, weaves into his scheme his moods and the moods of the subject; as a rule, the photographer aims for a snapshot which is only the raw and bare expression of a moment, and probably that is why so many photographs are so flimsy in their art. Where the vivacity of a movement is aimed at, the quick exposure is the camera man's only course.

I have often said that the sections of the photographic worker are dividing very rapidly—the man who is in the job for the sake of the dollars gained, then the man who loves the work and, all his spare time, is making advance and helping the progress of the medium, and the third section is science.

Now, there is no need to be shy; we all love the dollars—especially after we have earned a few—and for the keen business man to use photography as a means to earn is an easier matter than for the man who loves the art and has entirely to rely on his skill and works taking the fancy of those who appreciate art, or he, poor man, will soon have to tighten in. The painters in oils and water colors are in a similar boat when they start along the path of life's work.

William Crook, Craig Annan, Furley Lewis, A. L. Coburn, Marcus Adams, Hugh Cecil, Gordon Chase, William Illingworth, Malcolm Arbuthnot, Bertram Park, Clarence White, Will Cadby, Sherril Schell, Oscar Hardee, and Walter Benington—these and many other contemporaries are among our numbers who are determined to dismantle prejudice and raise professional pictorial photography to the highest column of success.

What these professional workers are doing now will live as monuments, milestones in the progress of photography, although their unique productions of today may be the conventional work of tomorrow, causing the saner rendering of true art from the soul of a man, produced by the draughtsmanship of the camera. We shall find the draughtsmanship of the camera will be made more faithful in rendering the inspirations of the artist, dominating the great field of photography.—*Amateur Photographer.*

LARGE HEADS DIRECT

IT is well known that, other things being equal, a direct photograph of a face is preferable to an enlargement. With our studio lenses we are inclined to get slight distortion of feature, which passes unnoticed in a small photograph, but which becomes prominent in an enlargement. Much attention is now being directed to the use of long-focus lenses for portraiture, and many people believe that the best work of the future will be done with the camera seven or eight yards away from the sitter. Speaking on this subject, a writer in *Photographic Scraps* gives pointers which should be helpful, especially to the man who occasionally tackles "at home" work.

A studio is not at all indispensable; very excellent work can be done in a fairly lighted sitting-room, the chief difficulty being to obtain the use of a room sufficiently long to permit of the use of long-focus lenses, which I hold to be of the greatest necessity to attain to success. I have produced some very

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satisfactory results in an ordinary room which has three windows and is much longer than broad. Placing the model in the best-lit corner, I stand the camera in that corner near the windows which gives me the longest diagonal of the room, some six to seven yards apart, and arranging matters so as not to obstruct the door I can then leave the camera safe in its corner whilst I pose the model. The room described is a drawing room; by hoisting the blinds up to the top and just drawing the lace curtains over the three windows I can get a very equal lighting, when the sun is not on that side of the house. The distance I have named of some six or seven yards between camera and model enables me to use very long-focus lenses, up to eighteen inches, which will give a good-sized head at that distance, and allows of going nearer to obtain very large heads. The use of long-focus lenses becomes absolutely necessary if we seek to obtain uniformity of definition together with absence of distortion. At a given distance, and with a given lens, at only a few feet from the model, it will be found difficult and sometimes impossible to obtain anything approaching equality in definition, and the effects of exaggertion of prominent parts will be fatal to success. When attempting to take a large head in a cramped space with a short-focus lens, as fast as we can get one feature in good focus another goes out of focus, and no compromise is possible except to produce a fuzzy negative which is sharp nowhere.

Again, long-focus lenses, at several yards distance from the model, will permit the use of larger apertures, in relation to focal lengths, than are possible with short-focus lenses, which must be stopped to such a degree that the exposure is seriously prolonged; in other words, the short-focus lens at close quarters will not work with a large aperture and give good definition.

If for no other reason short-focus lenses must be condemned for this purpose because of the inevitable distortion or exaggeration, of which a few trials will convince. The slightest movement of the head, or the least alteration in the angle (relative to the axis of the lens), throws everything into confusion. I have noticed that the act of breathing throws parts of the head into and out of focus at each respiration.

Before commencing to take large heads direct several things have to be arranged. Backgrounds will be required, and a number should be made of different tones or colors, to suit varying complexions or types of features, and to obtain any desired effect as regards principal lighting and relief. Sheets of strawboard, of large size, and each with a hole punched in corners to hang up on nails behind the head, will act satisfactorily. They may be coated with distemper of any shade or color from black to white, and probably half a dozen such backgrounds will meet all requirements.

Study the important matter of the principal lighting. Whilst a diffused and equal light will be the first essential, we must also have means of adding to or reducing the dominant light, so as to obtain light and shade, relief effect, and so on. In a studio furnished with a complete arrangement of blinds this becomes easy, but in a sitting-room many dodges have to be resorted to. If the room has two or three windows, dropping the blind in one may give the balance of light desirable, and enable one to direct the principal rays in such a manner as shall bring into prominence all the points of the features of the model. Models differ so greatly in the class of features that the keen observer of humanity will very soon see that he cannot treat all types alike; he will need to study their points, their style, and their individuality, in order to do justice to the excellence of his model. I might almost go as far as to say that no one pose and lighting will be equally suitable for all classes.

You must expose fully for heads. If you want to obtain the greatest softness, with delicate gradation in the flesh, you must avoid having to push development. Long development or forcing will most certainly produce harshness, excessive density on all prominent parts of features, and too much contrast, and the hair will always be darker in the finished print than it ought to be. It is really best to overexpose and control develop-

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ment. The result may be flat unless you take care; but a flat negative will give the retoucher something to do, and high lights can always be introduced in retouching. By giving full exposures such blemishes as freckles are reduced in their assertiveness, but underexposure will bring them out with unwonted strength. Full exposure and a developer weak in pyro are conditions favorable to success.

When posing the head, study the effect of raising or lowering the camera from a central horizontal line, which may be considered the nose. Some types are best suited by bringing the head vertical and making the axis of the lens in a line with the nose. Others, again, are best when the head is slightly inclined toward one side; and you have to find out which will be the best angle for the camera. There are certain formations of heads where it would be undesirable to give great force to high cheek-bones, just as it is advisable to diminish the appearance of double or triple chins if the model is "inclined" to *embonpoint.*

Study the exact amount of profile necessary to secure the very best effect for the particular head under treatment, especially as regards the showing of any part whatever of the off side of the face. Some heads must be taken in profile only, as high cheek-bones or fleshy cheeks mar the effect of an otherwise perfect profile. The deviation of an angle of a quarter of an inch will spoil the effect. I have seen this change happen between focussing and exposure, the model having moved slightly.

The dimensions of the head on a given plate should always allow plenty of margin to trim the print to the most effective size. If the head is to be vignetted, plenty of room will be required. On a 10 by 12 plate, if the head is six inches long that will be ample, but regard must also be had to the fact that female profiles frequently come out as broad as long, by reason of the elaborate dressing of the back hair, and you must then be guided by the width rather than by the length of the head.

In all cases top light must be avoided. In a room this difficulty is rarely encountered; in a studio it frequently is; and in the open air it always is, and therefore, in attempting heads in the open air, care must be taken to reduce the top light by a screen or roof. I must add that I succeed better in sitting-room than I ever did in the open air; the light does not vary so much, and is more under control.

The taking of large heads will be found a pleasant, interesting, and profitable line, and therefore suitable to amateurs and professionals alike, and the use of a long-focus lens will improve the results.

An Arrowroot Mountant. The following mountant keeps very well, and will be found to be a very powerful sticker. Half an ounce of arrowroot is made into a thick cream with cold water, and is stirred until perfectly smooth. It is then diluted to four ounces, and the vessel which contains it is stood in a saucepan of boiling water for five minutes, stirring the arrowroot occasionally. Half an ounce of gelatin is in the meanwhile soaked in four ounces of cold water until quite soft, and this too is placed in boiling water for the gelatin to dissolve. The two solutions are then mixed thoroughly by stirring, half an ounce of wood alcohol in which five grains of thymol is dissolved is added, and the mountant transferred to screw-topped pots.

A CHEERFUL spender never cultivates his popularity—if his money holds out.

THERE is something wrong with the sermon that doesn't last over seven days.

NO man is a tyrant—unless he has the opportunity.

GENIUS is a quarter-horse power. Talent will run to the limit.

AN advertisement should inspire interest and get the reader into a frame of mind to take another step forward.

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MEDICAL CINEMATOGRAPHY

By ERNEST A. DENCH

THE motion picture in surgery and medicine has not passed beyond the experimental stage. To the motion-picture photographer this news should be especially welcome, since it is a field offering many possibilities.

"The value of cinematographic radiography lies in seeing the actual processes taking place in the normal body," said Dr. C. H. Heydman, speaking at a medical demonstration in London. "We shall be able to travel with a piece of bread, a potato, a morsel of butter or meat, a pill, or a glass of beer, from the beginning to the end of its journey. We shall see, through the eyes of the cinematograph, what each mouthful does to us and how it does it. Then and only then shall we be able to draw our correct conclusions as to beneficial or hostile elements without having recourse to the simulated conditions of the laboratory or rule-of-thumb therapeutics or dietetics."

Dr. Doyen, who has produced fifty medical films altogether, is of the opinion that if the student sees a surgical operation on the film before viewing the actual operation he will be able to follow the latter with perfect comprehension.

Frequently animals are sacrificed for surgical purposes; but when this is done for the film, only one such sacrifice is necessary. Moreover, the experiment is the same every time, consequently failures are practically *nil*.

How are surgical films produced? In the early part of 1912, Siegmund Lubin, president of the well-known film company bearing this name, invented a machine which combined the motion picture with the *x*-rays. This machine enables a man's digestive organs to be filmed.

"I do not allow any doctor to go out to the Philadelphia Hospital and take away patients to be photographed," Dr. Neff is quoted as saying in a newspaper interview; "but such physicians as are attached to the staff are permitted to do so if the patient does not object. If the patient objects, that ends it; but I have heard of no objections being raised, and the patients become interested and enjoy the experience."

I know of a Frenchman who actually succeeded in filming the digestive organs of a trout. This fish was put on a restricted diet, which included flour, sugar, peptone, subnitrate of bismuth, and water. For filming purposes he used a table which was provided with a glass pool at each end in order to provide the necessary water to keep the trout alive. There was not an inch of extra space in which the trout could move and the top of the envelope was covered with a piece of paraffin paper. This tube was placed in the receptable under the table, the camera being focussed on the glass and operated by a electric motor. The trout was compelled to fast for two days in this cramped cposition, the constant flow of fresh water keeping it alive. This is known as the Carvello system. A special sized film, the depth of which is $2\frac{3}{5}$ inches, is used, and usually two thousand exposures per second are made instead of the usual sixteen. A motor controls the *x*-ray camera, and this motor can run at whatever speed suits the subject. To cover an operation occupying days the operator simply switches the clutch at the right gear, the result being that exposures are made at intervals.

Attached to this machine is a box which contains the roll of exposed film and two reserve rolls. It has been found necessary to overcome lighting difficulties by using a cardboard box as a hood. In the center of this box is a tube which has a fluorescent screen at its lower end.

Some time ago a German surgeon invented a machine, called the bio-roentgenograph, which demonstrated some interesting facts concerning the stomach. In the film taken the whole stomach was revealed at work, but when the animal subjects were excited or angered the stomach movements stopped.

The general course followed is to supply the patient with some digestible food—a regular meal, in fact—mixed with bismuth or barium to be opaque to

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the Roentgen rays, which are behind the patient. The camera, however, is in front, where it "registers" the movements of the stomach on negative stock larger than the standard size at the rate of twelve exposures every twenty seconds. The positive copies printed from the negative are on the regular film stock.

A motion-picture attachment to the electro-cardiograph has been invented by Dr. W. Einthoven, of Leydon, Holland. The electro-cardiogram is operated by placing a tiny thread of quartz or platinum, the diameter of which is no larger than one-thousandth of an inch, in the magnetic part of a powerful electric-magnet. At the back of the filament is an arc lamp, where the motion-picture camera is located.

Dr. J. Comandon, the famous French scientist, has produced several *x*-ray subjects, chief of which is "Radiography in Practice." In this several living subjects were treated, of which may be mentioned the bones of the wrist, the hand in a rubber glove, side "close-ups" of the knee, likewise the foot and the bones of the ankle.

In the "Examination of the Stomach" was shown the methods adopted by the doctor in getting ready the patient's stomach for the *x*-rays, and we see how the Crookes' tube which discharges the rays is worked, the patient imbibing the dose of bismuth in order that his stomach does not remain transparent to the rays, the Ruhmkorff coil. After this the patient's stomach is proceeded with.

Dr. Comandon saw a new precedent in the producing of these films. The studio scene was divided into two sections. In the first the regulation motion-picture camera, equipped with a quartz lens, was stood and focussed through the opening in the partition, which was dressed with a fluorescent screen. This screen was coated with calcium tungstate in order to affect the luminous radiation in such a way as to reduce the exposure. In the middle of the other section the Cooke's lens was located and the object was placed in position midway between the tube and screen.

Micro-cinematography makes it possible to descend the surgical ladder. One film I saw not so long ago showed blood corpuscles as large as dinner plates. These were at war with dozens of large microbes, which hit back at each other.

Lieut.-Colonel Sims Woodhead, professor of pathology in the Cambridge University, recently delivered a motion-picture lecture before the British Royal Army Medical Corps on "Microbes Worse than Wounds." The first film, "The Blood Circulator," depicted the path of blood in a tadpole's tail. The second picture, "Relapsing Fever," dealt with the injection of bacteria in blood and showed the spirochetæ swiftly gaining in volume.

To quote from my book, *Making the Movies* (Macmillan): "The lens of the motion-picture camera is focussed through a microscope which magnifies objects from two thousand to seven-six million times. The most exasperating thing about germs and microbes is that they persist in moving about in groups and have on respect for the limited area covered by the camera's lens. The photographer, to avoid this, generally contrives to have them appear against a black background. The light at the side is of two thousand candle-power, and this is of only just sufficient strength for photographic purposes. To make it stronger would kill all of the objects. The rays of this light are conveyed to the lens of the microscope."

In 1912 Dr. T. H. Weisenburg, professor of clinical neurology at the Medico-Chirurgical College, Philadelphia, presented five reels of films dealing with nervous and mental diseases at the Academy of Medicine. The leading picture introduced twenty-six patients for the purpose of demonstrating dementia precox, which was followed by cases of maniac depressive insanity, chronic mania, paranoid states, paresis, and melancholia.

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LEAVES FROM MY NOTE BOOK

By an Old Hand

THE ILLUMINATION OF THE DARK-ROOM

EVERY photographer has a dark-room, but in many cases the arrangement of the same is so bad that one wonders how any good work is ever turned out. No matter how small the room may be it is very easy to so arrange it that it may be convenient.

I think it should always be possible to enter and leave the dark-room at any time without letting in white light. This not only enables any one to come in, but also enables the operator, if suddenly called upon, to leave without endangering any sensitive material he may be handling at the moment.

This necessitates either double door with small chamber in between, or else a maze, and the latter is the more convenient, though it will take up a little more space; but if the walls of the maze are painted dead black, and a thick red or black curtain be hung at each end, very little light can get in.

The maze has one advantage over the double-door, light-lock system, and that is that it makes for much better ventilation. On this point many dark-rooms are wofully deficient, and if an operator smokes, as sometimes happens, the atmosphere very soon is absolutely unbreathable. It is not only necessary to provide an inlet for fresh air, but also an outlet for foul air, and as the latter is nearly always warmer then the outside fresh air, it should be near the ceiling of the room. As to the size of this outlet very little can be said, but it ought not to be less than about four square feet in area. The inlet for fresh air should be of the same size and naturally near the floor. I have seen dark-rooms in which the outlet for foul air was arranged in connection with the lamp, the heat from which creates a natural draught that is very beneficial as regards changing the air; but if electric light is used the heat from this is not so much as to be very efficient.

The question of the light is all-important, and many photographers have the very vaguest ideas as to what should be the nature of the light. Some use as little light as they possibly can, while others seem at first sight actually reckless and use a perfect flood. As long as the light is safe, and that is the important matter, it is immaterial how much light is used. I use 25-watt Mazda lamps, and have three in a room approximately 230 square feet in area, and, as it is nearly square, I get a brilliant light that is, however, absolutely safe for the fastest orthochromatic plate on the market. The lamps are housed in boxes that give 240 square inches of glass in all, so that practically I use a square inch of illumination to every square foot.

The one feature about my lamps is that the glasses are unchangeable. I can at once change to deep ruby, to a bright orange for developing papers, or to a deep green for using color plates, and, as every lamp can be switched on and off from the outside, this change can be made without letting out white light, which might be inconvenient.

The walls of my room are painted white, and therefore reflect as much light as possible, and, as the glasses used in the lamps have a sheet of tissue-paper between, a nice, soft, deffused light is obtained, which is much more pleasing than using clear glass, so that one can see the lamp filaments, for in this case it is very trying to the eyes.

There is one important thing which should be in every photographer's dark-room, and that is a light-tight box or drawer of convenient size, into which an opened box of plates or paper can be placed, so that one need not wrap them up again if one wants to turn on white light or is continually using the material. This I have found a great convenience.

Shelves in the dark-room are all-important, but they should be kept free from useless matter, and, except for chemicals, should not be used for storing anything, and never for storing sensitive material. Plates and papers are extremely sensitive to damp, and, with the prevailing fashion of using development papers, damp is about the very worst thing for them. And there is a very much greater danger, of which little notice is taken, but which has been the cause of all sorts of troubles for which no adequate reason could be found, and that is the storage of sensitive plates and papers in a dark-room where the sulphide redevelopment process is carried out. The sulphuretted hydrogen fumes are rapidly absorbed by paper and cardboard, thus coming in contact with the sensitive material, and the result is either general fog or curious markings.

If there is but one small sink it is difficult to arrange matters so as to be convenient, but there should be at least one common law for all dark-room sinks, and that is, that the hypo bath should have a place to itself. Now "a place to itself" does not only mean that the hypo dish should remain in one place, but that hypo in every shape or form should be kept to that place. No plate containing hypo should get out of that place, partially washed or unwashed. This means that a plate should not be taken out of the fixing bath and held up to the light except in that place—just that small section of the sink where the hypo, and the hypo only, should be.

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This makes for cleanliness, and if I had nothing but a small sink I would divide it off and keep the line absolutely. As a matter of fact, I use two sinks—one for developing plates and paper and the other for fixing only. The result is that I know that I can take up any dish or graduate in the one sink and rinse it and know that hypo has never touched it; while in the second sink I know that everything has, or may have, a contamination of hypo.

I go further and say that hypo on the floor of my dark-room, due to the carelessness of an assistant in handling a plate from the fixing bath, would mean what few men like, and that is a big calling down.

Hypo, like fire, is a good servant but a bad master. There is one and only one place for it, and that is not all over the dark-room but in its own place.

VIEWS AND REVIEWS

American Institute of Graphic Arts Photographic Exhibition

Commencing Monday, October 4, 1916, and continuing for the entire month, there will be held in the galleries of the National Arts Club, New York, an exhibition setting forth the development of photography from its discovery in 1839 to the present day.

The exhibition promises to be the most comprehensive yet attempted, showing photographic accessories both old and modern, the first photograph of the human face, daguerrotypes of notables, interesting ambrotypes, tintypes, and specimens of various stages of progress culminating in the work of the artists of today, and is sure to be of special interest to all photographic workers.

"Abstracts and Translations"

Owing to the non-receipt of the foreign photographic magazines, during the war period, we are compelled, for the present, to discontinue Prof. E. J. Wall's valuable department, "Abstracts and Translations." As soon as these magazines reach us, with any regularity, we will resume this important feature. In the meantime our readers may expect practical contributions by Prof. Wall.

Books on Color Photography

"The Photography of Colored Objects"

By Dr. C. E. K. Mees

A revised and enlarged edition of Dr. Mees' well-known book on this subject. Its 118 pages contain much new matter and an increased number of helpful illustrations and diagrams. The nature of color, its transmission through orthochromatic filters and the correct rendering of color contrasts in portraiture and landscape photography, and the photography of colored objects for reproduction are very thoroughly demonstrated. Strictly scientific phraseology is omitted, but no attempt has been made to be entirely "practical" at the expense of accuracy.

The opening paragraph to the chapter on portraiture: "In no branch of photography is the reproduction of colored objects in monochrome of greater importance than in portraiture, and in no branch is it in greater danger of being ignored," indicates very clearly the necessity of a very thorough understanding of the effect of color in everyday studio practice. The chapters on Portraiture, Landscape Photography and The Photography of Colored Objects for Reproduction are thoroughly practical and will enable the photographer to get correct color values. It is a very necessary book and can be bought through your dealer for fifty cents.

"Wratten Light Filters"

The third and revised edition of this book has been recently issued by the Eastman Kodak Company, Rochester, N. Y., and covers very thoroughly the entire Wratten line of filters, of which there are nearly a hundred varieties. These are listed, and a spectrophotometric curve of each filter is reproduced. Tables of filter factors and percentage transmissions are given. A book that every photographer using orthochromatic plates should have. Paper covers, price, fifty cents. At your dealers.

"Photomicrography"

This little book is an introduction to photography with the microscope. It is for the beginner and is intended to be practical, not scientific, its object being to explain the easiest methods rather than discuss various possible methods. The diagrams amplify the text and the illustrations are good examples of the results to be attained. This booklet is not intended to replace the regular text-books on photomicrography but to serve as an introduction to the subject, and which it accomplishes very thoroughly. Thirty-five pages, numerous illustrations, and two filters for visual use. Price, fifteen cents. Published by the Eastman Kodak Company, Rochester, N. Y. It can be obtained through your dealer.

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"Color Plates and Filters for Commercial Photographers"

Issued by the Eastman Kodak Company, Rochester, N. Y. The object of this booklet is to enable the commercial photographer to make the best use of color-sensitive plates and filters, so that he can reproduce in monochrome any colors in any relative brightness desired. In other words, how best to produce in black-and-white the closest possible approximation to the colored original. Suitable plates and color-filters are now obtainable adapted to the whole range of colors likely to be met with in ordinary practice. The booklet contains practical instructions and formulæ, and a series of halftone reproductions showing the remarkable results obtained by the use of the panchromatic plate and filter compared to the ordinary plate. A copy will be gladly sent on request to the Eastman Kodak Company, Rochester, N. Y.

Artatone Paper—A Beautiful Plastic Medium

The International Photo Sales Comporation announce that they have acquired the selling rights for "Artatone" paper in this country.

Artatone is an effective Japanese tissue, and can be used for prints as well as enlargements, coming as it does in two different emulsions. It had conferred upon it the highest award at the Panama-Pacific Exposition—a gold medal—and the beautiful effects that can be obtained are unusual and truly wonderful.

To the photographer who is seeking pictorial effect we strongly recommend writing for further particulars to the above company at 13 East 40th Street, New York City.

The Brooklyn Institute of Arts and Sciences, Department of Photography, Academy of Music Building

Proposed Events of the Department of Photography, Season of 1916–1917

Loan Exhibition of Prints

Monday, October 30, and Monday, December 11, 1916. Monday, January 22, and Monday, March 5, 1917.

Saturday, April 28, 1917, Twenty-seventh Annual Exhibition.

Demonstrations

October 13, November 3, November 24, December 13, 1916. January 5, January 24, February 16, March 9, March 30, April 20, 1917.

Lectures on Photography

November 30, 1916, and April 26, 1917.

Recognizing the broadening influence of artistic photography in portraiture, magazine illustration, and as a medium of art expression, the Department of Photography of the Brooklyn Institure of Arts and Sciences has decided to increase the scope of its work in securing the coöperation of three of the most prominent pictorialists in this country, namely, Paul Lewis Anderson, Karl Struss, and Clarence H. White.

The course will consist of twelve sessions, the first four of which will be given by Karl Struss, on October 5 and 19, and November 2 and 16. The second four sessions will be given by Paul Lewis Anderson, in December and January, and the last by Clarence H. White, in February and March, on alternate Thursday evenings.

Anyone interested in photography living near New York and Brooklyn will be well repaid by attending this special course, which is open to beginners as well as advanced workers. It is an unusual opportunity for all photographers. The cost of tuition for members of the Institute is $10 and $14 for all other persons.

Write at once for prospectus giving full particulars to the Brooklyn Institute of Arts and Sciences, Academy of Music, Brooklyn, New York.

Classes

(Advanced Classes)

Instruction in art photography, October 5 to April 10, first and third Thursday evenings and four Saturday afternoons at studio work, under the instruction of Clarence H. White, Paul Lewis Anderson, and Karl Struss.

Instruction in rudiments of photography, October 3 to April 24, on Tuesday evenings.

Beginners' Class, first and third Tuesdays.
Advanced Class, second and fourth Tuesdays.
Also four afternoons in field work and ten demonstrations by William H. Zerbe.

"Caltone"—A High-grade Developer

Our attention has been called to numerous printed articles directed against the cheap, unreliable metol substitutes, said to contain sugar, salt, sodium sulphite, hydrochinone, caustic soda, pyrogallic acid, etc.

Now the quality of any developer is determined by its general efficiency, color or tone; number of prints worked with a given quantity of developer, its slow oxidizing properties, etc. All of these Caltone developer will do admirably, as it combines the important basic constituents of other developers, such as monomethyl-paramidophenol sulphate and paramidophenol chlorohydrate in quantities to produce the greatest possible reducing action on sensitized surfaces.

Caltone developer is also specially combined so as to offset the tendency to poisoning and the usual effects on the skin tissues of the hands of the operator; in other words, Caltone is an antiseptic or medicated developer and will have a minimum effect on the skin of operators susceptible to hydrochinone or alkaline poisoning. This represents a radical departure from all photographic developers, which fact alone should commend it to all operators who appreciate a feature of such vital importance to their health.

Write The Berlin Aniline Works, 215 Water Street, New York City, for their *Little Book about Caltone Developer.*

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"Photographing the Children"

The above is the title of the lastest, No. 152, of *The Photo-Miniature*—a complete hand-book to this most interesting and profitable of all fields of photographic work, treating the subject from every point of view and giving the results of experience with effective illustrations. The price is 25 cents, and can be supplied at this office or by the publishers, Tennant & Ward, 103 Park Avenue, New York City.

A Metol Substitute

The well-known and reliable house of G. Gennert, 24 East 13th Street, New York City, announce that they have the exclusive agency for Paramidophenol Hydroclone—Edison. This developer may be used in place of metol in the usual formula with gratifying results.

Do It Now

There is nothing which tends to facilitate work and make things smoother for everybody concerned than to adopt the practice of doing a thing at the earliest possible moment. Even if there appears to be plenty of time in which to do a job, weeks perhaps, it is as well to get it done and to enjoy any lesiure afterward free from the consciousness that there is something waiting to be done. Photography, with its myriads of little jobs, affords more scope for the exercise or neglect of promptness than most other trades. The chair with a castor off goes on limping for a month; the residue tub is not precipitated and emptied; the odd copies are put off for a week or two, and the consequence is that when someone is tired of waiting the work has to be done often at an inconvenient time, and the cash which might be in the bank is still in the customer's pocket. Now there is no more hardship or extra labor in doing a thing today than there is in doing it tomorrow, next week, or in three months. In fact the danger is that the advantage of having done it will not be noticed because the worry of not having done it has not arisen. From the conscientious assistant's point of view the satisfaction of knowing there are no avoidable arrears of work is great, and if occasion for a little time off arises it can be asked for with a clear conscience and without fear of a reference to work waiting to be done. While the assistant may and should cultivate prompt action in all his work, it is more particularly the duty of the proprietor or his manager to set the example. The cigarette should come after the job, not before it, and the responsible head of a business should make it a law to himself not to leave the premises without reasonable cause during business hours. In a business where the principal takes a long lunch time there is little doing in his absence; when he returns there are complaints and hustling to make up partly for time lost, but nothing can repair the loss of moral effect.—*British Journal of Photography.*

Conventions

A convention is a body of people gathered together for the main purpose of exchanging misinformation, and the incidental purpose of preventing any intelligent result from being arrived at.

Every convention is composed of delegates, and, owing to some illusion of the mind, every delegate firmly believes that by attending the convention he will not only learn something himself, but will be materially aiding progress. That neither of these results is achieved by any convention more than once in a century does not deter the hopeful delegates.

Conventions are fostered by railroads, hotelkeepers and town publicity bureaus. It is presumed that when a town is big enough to have conventions held in it, it is on the road to prosperity. In reality, this usually marks the highest point in its bonded indebtedness and vice.

Conventions accomplish two things: they satisfy man's gregariousness, and perpetuate the time-honored maxim that where ignorance is bliss 'tis folly to remain at home.—*Life.*

Kathol, an Efficient Developer

When the European war broke out, in the summer of 1914, photographers and chemical supply houses felt no apprehension concerning their supply of developing chemicals. The dearth of high-class imported photographic developing reagents which ensued is now, of course, well known to all persons connected with photographic or motion picture enterprises.

One of the first to anticipate the coming shortage of developing chemicals was Dr. C. J. Thatcher, an organic chemist, who had secured his training in German universities.

Bearing the extensive requirements of the motion-picture industry in mind, Dr. Thatcher set to work to evolve a photographic developer which would possess similar characteristics and chemical action to the extensively used reagent, metol. The result was the product "Kathol," on which a United States patent was granted to Dr. Thatcher on October 26, 1915.

In perfecting the formula of the compound, Kathol, an endeavor was made to produce a compound which could be used in the place of metol in existing formulæ, and in the same quantities as the metol which it was designed to replace.

Kathol first appeared on the market in the latter part of 1915, and since that time has found its way into use in numerous film laboratories, in addition to being used by the regular photographic profession also.

Such well-known concerns as the American Press Association, National Photographers, Inc., and the Defender Photo Supply Company are regular users of Kathol, and this developer is being extensively used by some hospitals for the development of *x*-ray plates.

A New York corporation was formed in March of this year, with Dr. Thatcher at its head, to manufacture and distribute Kathol to the photographic and motion-picture trades. The aim of the Kathol Manufacturing Company, whose plant is located at 230th Street and Riverdale Avenue, New York City, is to supply their product at as reasonable a price as possible.

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THE WORKROOM

By the Head Operator



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Practical Washing
Varnish for Camera Leather Bellows
Pressing Mounted Prints
Soft Bromide Prints from Hard Negatives
To Blacken Aluminum Camera Parts
Rough-surface Prints
Stand, Time, and Factorial Development

A Plea for the Workroom

You spend money on your reception room, your window, or your showcase—on paint, wall-paper, carpets, and furniture—and you know that whatever you spend on these things will bring you, in the long run, a handsome return.

But what about your workroom? Are you trying to save money by starving your workroom? If you are, you are adopting a short-sighted policy.

A comfortable, well-equipped workroom helps to increase your profits. It means less waste, better and more uniform prints, and a more contented spirit among your assistants.

Heating and ventilating are too often neglected in workrooms. Even in many otherwise high-class establishments the workroom is like an ice-house in winter and like a furnace in summer. No assistant, however conscientious he may be, can do his best work when handicapped by such conditions.

Then in equipment many photographers allow their workrooms to remain hopelessly out-of-date. This is difficult to understand in cases where so much is spent in keeping the rest of the premises smart and modern. Do you know that an assistant is apt to get into the slovenly habit of relying on guesswork unless you provide him with a thermometer, a pair of reliable scales, and suitable graduated measures? Do you know that you run a risk of sending out pictures that may very soon deteriorate, unless you have the right dishes and a good big sink where your prints can be thoroughly washed?

You know how much sensitive paper you buy from month to month, and you can easily keep an account of the number of prints of various sizes that a month's supply of paper gives you. Find out how much goes in waste. Further, note the average time spent on making a dozen prints. When you have got these facts together, bring your workroom up to date.—*Photo-Digest.*

Keep a Scrap-book

I find in talking with my friends that very few know what a plesaure and advantage it is to have a scrap-book. It freshens the memory and gives one new ideas about our interesting business. The usual excuse is, I am too tired at night after a day's work to bother with it, and yet it takes but a few minutes of your time, and, once begun, will be a source of endless pleasure. I do not keep my magazines. As soon as they are read I go through *Vanity Fair* or the magazine on hand, and clip out every picture that gives me an idea on posing, lighting, or grouping (not confining myself to those which *look* as if they could be copied in a photograph), but all the artistic pictures of every class. Then I go through the ads and clip out everyone that has an original idea in illustration.

Photographs for advertising purposes are used more every year, and quite a number of photographers add to their yearly income by giving this line a little attention. An 8 x 10 plate attractively illustrating some advertised article will bring from $10 to $25. In making such pictures the light and shade must be carefully considered as well as the surroundings. Actors make good models for this class of work. When girls or women are employed they should be refined and graceful in carriage. Of course, they must be good-looking.

You can easily make your scrap-books up of heavy manila paper. I find a book about 9 x 15 a good size. Keep the portraits in one book; general subjects and advertisements separate. A valuable library will soon be at your disposal for study and reference.

I also cut up my photographic magazines, and so secure every item of interest ready for use when needed: Formulæ, business hints, scraps of photographic history—in fact, everything that I think may come useful to me at any time. Often a picture can be improved, or will be a gem suit-

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able for exhibition if finished in some way out of the ordinary; by referring to your scrap-book you will run across just the idea you want.

Give a liberal space for hints for new pictures that will please your customers and bring dollars to you. Often an item of eight or ten lines in a photographic magazine gives you the gist of the whole article, and by clipping it out you have it ready to serve you at a glance. The scrap-book quickly becomes a good investment.—J. E. WATSON.

SMART WINDOWS

THE dressing of windows usually seems to be left to the receptionist, with more or less—mostly less—supervision from the principal. Perhaps this accounts for the deadly sameness of most photographers' windows, for the busier the reception-room staff are the less attention the window gets.

It is a pity photographers don't take a leaf out of the books of many of the largest concerns in this country, for it is quite astonishing the amount of care and skill that is expended nowadays on window-dressing. And it pays too, or smart firms would never care about it.

The fault of most windows seems to be lack of thought and care, and, only too often, overcrowding. Windows, as also the specimens, are kept more or less clean, but that is not nearly enough.

Most photographers would do very well to keep two or three sets of hangings and draperies for their windows, some darker, some lighter, and of quite different materials. In winter, darker, cosy-looking hangings, of velvet, plush, or so on, could be used, of a warm, cheerful, color, but not too light. For spring or summer, a couple of sets of quite light hangings, in choice colors of casement cloth, are very suitable. This material is, or was—the range of colors is slightly restricted now—made in a wide selection of very good colors, and is—if a really good quality be bought—not very prone to fading.

I said a couple of sets of hangings, because light colors soon soil and need washing; also a change is good for eyes and specimens, and can be varied somewhat to suit the mounts, etc.

Many windows seem to suffer from overcrowding. If the window is low this is particularly bad; the prints should be put on small easels, to make them more easily visible.

The window is, of course, the photographer's chief and best advertisement; but many do not use it enough, or get the best results out of it. The contents are more or less of a jumble, a little of everything and nothing special. There is at present, and will be in the near future, a large amount of copying and enlarging to be done, but often before an order can be secured the thought must be put into the client's mind. How? Well, as good a way as any would be to make a special window show of copies only—no enlargements in the ordinary sense—not too many of them, and the best copies you can get from the most noticeably poor originals.

Often a customer does not mind parting with a poor original in exchange for a few extra prints, and this is good business. The original, together with the enlarged and reduced copy, should be framed, *e. g.*, passe-partout fashion, and from six to a dozen different examples put in together in various styles of finish—carbon, platinum, bromide, sepia, and so on—together with a neat suggestive reminder, such as, "What about the photograph you want copied?" or, "Bring in that old photograph of yours before it fades too much."

Do not on any account crowd them up too much in the window; a few, well shown, that do themselves full justice, are far more effective in bringing in orders. The same can be done with ordinary enlargements of sitters, showing both enlargement *and* the original print, to display the improvement effected by enlarging.

But on no account should these showings be made along with ordinary work; let them have a window to themselves.

If a big building is burned down and you photograph the fire, why, don't put in an ordinary print, but an enlargement, dyed red, which will give a much more realistic effect and attract much more attention. It's well worth the extra trouble.

Just now, in society, there is rather a craze for garden pictures. Why not take some good negatives of friends' gardens, and make a special showing of, say, nice soft green carbons of these views, and nothing else? Orders are sure to result, and the more realistic color will make the show more attractive; or good bromide prints might be dyed, though the carbons are far better.

Then, again, attention ought to be given to what is put in. People do not feel attracted by winter dresses in the season of garden parties, when they wear muslins; nor do people usually sport new bikes in winter. Keep showings of sitters with new cycles until spring, when many others are also buying new machines, and the idea of being taken with theirs may result in good orders. Sports groups, and so on, should be displayed at their proper seasons, not just at any time.

At any rate, much more use might often be made of topical events than is done in the way of making attractive window shows, which amply repay the time and care spent on them.—*British Journal of Photography.*

MY CLEANING UP

HAVE you ever gone into the reception-room of some leading photographer and felt as though you had entered a Chicago hotel? I have, more than once, and I have wondered if so much display helped any in the quality of the work done. But whether or not, I have come to the conclusion that such display in greater or lesser degree, according to the calibre of the business, is a good paying investment. In the case of the poor photographer, at any rate, people no longer associate "Bohemianism" with art, but rather with shiftlessness; and they would as soon go into an unkempt reception-room as into a dirty drugstore. And why not? Whatever may be the case in the gallery itself, the reception-room is no workshop, and there is no excuse for keeping it like the public room of some wayside railroad depot. From all that we

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see and hear, our leading photographers—such men as Steffins and Falk and others—not only do good work, but also keep their studios as though they were palaces. Several firms have started very recently, and at once, by sheer clever investment of capital, have taken a leading place—financially speaking—among American studios. There is no doubt about it; appearances go a long way, and an inviting reception-room is mighty comforting to a customer, and does its share toward inducing that pleased expression.

I have often wondered how some fair ladies appreciated the dressing-rooms that some photographers offer. I have seen them furnished in a style I would feel ashamed to arrange for a hired girl. A tiny dressing-room is often an unfortunate necessity; but it may at least be clean and wholesome.

More years ago than I care to count, I had to go out West on a long visit. I couldn't afford it, but it was a necessary matter of health. I left the business in the hands of a brother and an assistant. My fellow-townsfolk knew why I had gone, and they didn't take their custom away. All the same, things were not flourishing, and when I came East in the fall, after nearly a year's absence, I felt that things had to be wakened up somehow. I went into the gallery, and I never felt so ashamed before. One corner was littered up with useless accessories that just *wouldn't* look tidy. The rest of the floor was littered with things in use, but they all had a tired, seedy look, as though they had lived a twelve-month in a barn. The studio was papered and the paper was faded. The cameras were battered and their brass work tarnished.

But why add to the list! Now there was not, perhaps, a single thing in the studio that would not do its work just as well as though it were new down from the dealer's. But as for looks; well, it rather suggested a junk-store. It was a lesson to me. Those things had been going from bad to worse, in appearance, under my eyes for several years, and I had been blind as a bat. Coming fresh on them after a long vacation, I saw the nakedness of the land, and could have kicked myself. I had no money to spend on decoration, but luckily I had sense to see that little as I could afford cleaning up, I could less afford leaving things as they were. I hired two scrubwomen; they drank lots of beer at my expense, but they scrubbed the gallery from top to bottom. Labor-saving appliances were not so fashionable in those days. They were not content with mopping; it was real old-fashioned scrubbing—knee work.

The skylight sashes were scraped, and I painted them every one. The blinds and screens were washed, and the backgrounds were touched up. One or two of the accessories were scrubbed until the naked lumber foundation showed, and I was secretly glad to see them come to grief. The woodwork was washed with soap and water, and polished with some cream which one of the scrub-women supplied. The metal work was polished up, and I began to save for new paper. I may have made many mistakes since those days, but I have tried to keep clear of signs of poverty or carelessness. They don't pay. I don't believe that half the untidy photographers know that they are untidy. They just gradually drift so, as I did. But if they wake up to the fact that they are untidy, let them also discover that it doesn't help any in pleasing customers. Call in the cleaners and decorators; or if the wad won't stand it, then call in the mop brigade, and invest in a few dollars' worth of paint.—F. S.

Plate Changing for the Studio

Very different methods appear to be in use in different studios which I have seen for the supply of plates in the studio during sittings, and therefore perhaps a few notes on this matter will be of help to those who are not now satisfied with the system that they employ. There should be as little bother and running about to get the plates changed as possible, as this tends to put the operator off the work that he has in hand and to distract his thoughts. At the same time it does not give him a chance to get into conversation with his sitters. There is also the waste of time and energy to be considered in going to a changing-room a little distance from the studio and, as I have seen in two or three places, going up or down a few steps. Even if the operator has an assistant with him in the studio, this running off to some little distance is not a good plan, for just when there is no plate ready it often happens that a good and spontaneous pose will be taken by the sitter which the operator could have secured if the plate had been ready to hand.

Another point to take into consideration is the fact that if a large and almost unlimited supply of plates is kept in the studio ready for use there is a great temptation on the part of the operator to waste plates. I know of one man whose work is very good indeed, and is known to all photographers, who keeps a stock of plates in envelopes, having about thirty always ready, and I have seen this man operate and expose several more plates than was at all necessary during a sitting. I do not mean that plates should be spared to obtain good results, but in this case it was sheer waste to use two plates, as he did, on every position.

On the other hand, I know of another man who has but a single dark-slide in his studio, and his changing-room is along a passage and round a corner, about twenty yards from his studio. I have known this man to leave a sitter—and a child sitter at that—and slip off to change his plate, so that on his return all the work of getting the sitter into the position he desired had to be done over again!

Again, it is not a good plan to have to change plates in the same room that is used for developing—that is, in the dark-room proper—but if it can possibly be schemed, a separate small room should be made and used as a changing-room only. Even with the best management it will sometimes happen that one wants to change plates for the studio when someone is developing plates in the dark-room. By far the best plan is to have a small part of the studio itself given up to the use of a changing-room. Such a small room need not in any way take from the general effect of the studio, as it need only be very

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small, and can be built in the corner so as to match the decorations of the studio. In my own case I have at one corner of the studio a small changing-room which is made to match the studio walls, being panelled with three-ply oak, as is the entire side of the room.

This not only looks quite well in itself, but gives me one of the most useful corners of the room, nicely broken up, to use as a natural background. In fact, some of my best effects have been obtained by using this corner room as the background. It is only four by three feet in size, but this is quite large enough, as nothing but changing plates is done in it. The door is made to match the general panelling effect, having a small handle on the outside and a plain bolt on the inside to lock it if necessary, as is sometimes the case when inquisitive children are in the studio. But in normal work it is not locked at all, but is simply kept closed by means of a piece of strong elastic, such as is used for catapults.

It is advisable not to have any daylight window in this small room that looks out into the studio, as people easily get the impression that they are being looked at from inside the room. Whenever possible the light should be electric light, which is best suspended from the ceiling to hang over the changing bench. This bench should be fairly wide, so as to allow the dark-slides to be placed upon it fully opened, and at the side should be other smaller benches or shelves on which the different size plates ready to fill into the slides are kept. One should also get into the regular habit of keeping these different boxes always in the same place on the same shelves, as one can then reach out and get any desired box of plates without having to actually look for it at all. In my own practice I have the actual stock of plates up on some higher shelves, and then on each lower shelf there is a properly made box in which about a dozen plates are always kept ready for immediate use, these having previously been taken out of their wrapping papers.

In actual use I like to have at hand and ready filled for each sitting four plates of the size I am using for the sitting, and then if I want more than four I can slip into this little room and put in two or four more in a very little time, and at the same time can hear what the sitter is saying quite easily and can reply to any question; but in normal times I generally like to have an assistant in the studio with me, who can slip in and change the plates.

It is such an easy matter, and not at all costly, to make a small room like this in almost any studio, that any who at present have to go right out of the studio for the purpose of changing plates are bound to find it a great advantage.—H. Essenhigh Corke, in *British Journal of Photography*.

Toning P. O. P. to Get a Black Image

Lead in the combined toning bath, as was shown some years ago by Professor Namias, has the effect of causing the tones obtained to be blacker, and, if the other conditions are suitable and remain unaltered, the more lead there is present the blacker will be the tone. It is not possible at any time to get an absolutely black color with p. o. p. and a combined bath; if that is wanted, then bromide or gaslight paper should certainly be used, as with those materials a fine black can be got without any toning at all. On p. o. p. the nearest approach to black is obtained by toning first with gold and then with platinum. The method is indirect and somewhat complicated. It requires great care and accuracy if the same tones are to be obtained on a succession of prints: while the present price of platinum salts—if any are to be got at all—puts it out of the question. At one time this method, however, enjoyed some popularity among professional photographers of the better class. At the present moment, if anything approaching a warm black tone is to be got on p. o. p., it must be done by means of a combined bath containing lead.

One cannot do better than follow exactly the instructions given by Professor Namias himself. He first pointed out that to obtain the best tones it was important to add the lead salt to the hypo solution in such quantity that the precipitate which first formed showed some reluctance to dissolve. Four ounces of hypo are dissolved in hot water to make ten ounces in all, and when cold the lead is added. For this purpose we dissolve an ounce of lead nitrate in eight ounces of water, to which a dram of acetic acid has previously been added, and then add water to make ten ounces in all. These are stock solutions and the lead solution is added to a sufficient quantity of the hypo for present use, a little at a time, stirring or shaking after each addition until there remains a distinct cloudiness. The solution can then be filtered through a tuft of cotton wool put into a funnel, and should come out practically clear. To each pint of this two grains of gold chloride dissolved in a little water should be added, and the bath is ready for use at once. In spite of the acetic acid present, it will not be found that there is danger of permanence from the hypo being decomposed, but the quantity specified should not be exceeded. The acid makes the toning take place more quickly, and the quicker the toning the less likelihood is there that the whites will be discolored. After once using, if there is no possibility of the hypo being exhausted, the solution may be filtered and put back into a bottle and used again within the next week. It will be in working order, but may require the addition of further gold.

While such a bath will give very rich dark tones, it will only do so if the prints themselves are rich enough to possess an image that will stand the toning. The negatives must be good and not too thin: with more density, in fact, than would make them suitable for the slower kinds of gaslight paper. Printing is carried on until the whole of the image appears decidedly buried; the extent of over-printing required depending to some extent, apparently, on the brand of p. o. p. in use. A few experiments are sufficient to show how far to print. The prints are placed direct, without any preliminary washing, in the combined bath: they must be kept moving, and not allowed to lie in a heap,

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and when toned must be rinsed in several changes of water at once, to prevent the toning from proceeding further than is desired.—*Photography.*

Hydrokinone for Negatives

Looking over a price list of developers, it will be found that—at least as far as ante-war figures are concerned—one of the cheapest of all is hydrokinone. In normal times it can be bought retail for less than one dollar a pound, and the comparison between its present cost and that of other preparations for the same purpose is just as marked. This being so, it is strange that hydrokinone is not more used as a developer, especially as there are many who express their belief that one developer is just as good as any other. There must be something against hydrokinone, or surely it would have displaced most, if not all, of its rivals.

We believe that some of the objections to it are real, some imaginary.

Among the real objections may be mentioned the fact that oxidized hydrokinone gives a very intense yellow stain, which when present in aggravated form seems to be quite without a cure. Lantern-slide makers who use hydrokinone—and it has always enjoyed popularity for this purpose—know that unless the slide is rinsed well between development and fixing there is always a risk of this stain making its appearance. By taking this easy precaution, however, there is no fear of the stain.

In bygone times it was urged against hydrokinone that it was unsuitable for under-exposed negatives: but for plates or films which one knows to be under-exposed it is hard to say what developer *is* suitable. Metol and others of its type which are sometimes recommended do not actually bring out any more detail in the under-exposed parts than can be got with hydrokinone: but they tend to give fog, and fog is very often mistaken for detail in such cases, whereas hydrokinone is particularly clean in working. With a correctly exposed plate and a properly made-up hydrokinone developer, negatives can be obtained which will hold their own well with those made in any other way whatever.

There are certain peculiarities which distinguish hydrokinone from other agents. It is sluggish in action, and it is therefore usual to find that the formulæ for hydrokinone, when used by itself, recommend caustic soda and caustic potash as the alkalies, because these are more powerful accelerators than sodium or potassium carbonate. It is best in all cases to avoid the caustic alkalies, as they are not actually necessary, and they tend to soften the gelatin and to introduce other troubles.

The secrets of the successful use of hydrokinone are to avoid adding any bromide to the developer—it is not necessary, and has a very powerful restraining action—and to take care that the developing solution is not too cold. At 70° F. hydrokinone will develop as rapidly as one can wish; at 55° it is extremely sluggish; at 40° it has no developing power at all worth mention. Much of its early reputation for sluggishness and feeble developing action was due to its use at too low a temperature.

Hydrokinone is not so soluble in water that a very concentrated solution of it can be made up as simply, say, as one makes up a 10 per cent. pyro solution; but, as Mr. Wellington pointed out many years ago, it is freely soluble in methylated spirit, and an ounce of hydrokinone dissolved in three and a half ounces of methylated spirit, with an equal quantity of sulphurous acid as preservative, may be diluted with water to make a 10 per cent. stock solution. This can then be used in place of pyro, with sodium carbonate as the accelerator, in the usual way.

A very simple and efficient hydrokinone developer for negative work can be made by dissolving one ounce of hydrokinone and three ounces of sodium sulphite in three parts of water. The No. 2 solution consists of half a pound of sodium carbonate and half a pound of sodium sulphite in three pints of water. Equal parts are mixed for use.

Hydrokinone is so clean-working that one is easily led to suppose that it does not bring up detail as well as some of the others: but this we believe to be an illusion. The negatives which it gives are blue-black, and are quick printers.—*Photography.*

Non-sulphide Methods of Toning Bromides

Sepia Tones by Re-development. C. Welborne Piper has worked out a method of obtaining warm tones by bleaching the print and redeveloping in full light with a highly restrained developer as used in the ordinary way for obtaining warm tones usually on lantern slides. The advantage of this process over that in which a restrained developer is used in the first instance is the greater certainty of working and the much better regularity of tone which can be secured in a series of prints. The tones are better than those by the sulphide method. A suitable bleaching solution consists of 10 grs. of bichromate of potash and 5 minims of hydrochloric acid per ounce of water. The bleached prints are well washed and immersed in the following developer, which is used in a good light (daylight):

A

Hydroquinone . .	160 gr.	36.5 gm.
Potass. metabisulphite	90 gr.	20.5 gm.
Potass. bromide . .	20 gr.	4.6 gm.
Water	10 oz.	1000 c.c.

B

Ammonium carbonate	1 oz.	100 gm.
Water	10 oz.	1000 c.c.

A mixture of equal parts of these two solutions forms a very useful developer.

With two parts A, one part B, and one part water, development is slower and we can stop at a light red-brown tone. With two parts A and three parts B, development is quicker and a deep brown is quickly reached.

Very good warm browns are produced when potass. ferricyanide is the bleacher, while with

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the ferricyanide and bromide bleacher purplish browns are more readily obtained. When copper chloride is the bleacher, black tones only are produced.—*B. J.*, March 26, 1909, p. 231.

Some further notes on the method recommending an ordinary hydroquinone developer modified by using for the alkali, or No. 2 solution, a mixture of ammonium bromide 1 oz., strong ammonia 1 oz., in water 10 oz., are given by Mr. Piper. Equal parts of the two solutions are mixed and the mixture diluted with an equal bulk of water. This re-developer gives a rich brown tone.—*Photo-Notes.*

Toning Bromides. The following formulas are given by Dr. Sedlaczek for toning bromide prints, in his work *Die Tonungsverfahren von Entwicklungspapieren* (Halle: W. Knapp.)

Deep Brown Tones

Uranium nitrate, 10 per cent. sol.	50 min.
Potassium ferricyanide, 10 per cent. sol.	20 min.
Potassium oxalate, 10 per cent. sol.	50 min.
Hydrochloric acid, 10 per cent. sol.	10 min.
Water to	2 oz.

Warm Brown Tones

Uranium nitrate, 10 per cent. sol.	50 min.
Potassium ferricyanide, 10 per cent. sol.	20 min.
Potassium oxalate, 10 per cent. sol.	50 min.
Ammonia alum, sat. sol.	100 min.
Hydrochloric acid, 10 per cent. sol.	3 min.
Water to	2 oz.

Brown Tones

Uranium nitrate, 10 per cent. sol.	50 min.
Potassium ferricyanide, 10 per cent. sol.	20 min.
Rochelle salts, 10 per cent. sol.	70 min.
Tartaric acid, 10 per cent. sol.	10 min.
Water to	2 oz.

Reddish-brown Tones

Uranium nitrate, 10 per cent. sol.	50 min.
Potassium ferricyanide, 10 per cent. sol.	20 min.
Rochelle salts, 10 per cent. sol.	50 min.
Ammonia alum, sat. sol.	100 min.
Tartaric acid, 10 per cent. sol.	50 min.
Water to	2 oz.

It is not advisable to use the baths too long or for too great an area of paper: 3½ oz. should suffice for about 700 square inches.

If the prints, no matter what bath they are toned in, are treated for five minutes to

Sodium sulphide	2½ gr.
Hydrochloric acid	1 min.
Water	2 oz.

they assume a deep brown tone, and will keep for at least four years without any change or bronzing in the shadows.

Deep Blue Tone

Ammonia iron alum, 10 per cent. sol.	12.5 min.
Potassium ferricyanide, 10 per cent. sol.	10 min.
Potassium citrate, 10 per cent. sol.	10 min.
Ammonia alum, sat. sol.	50 min.
Hydrochloric acid, 10 per cent. sol.	2.5 min.
Water	1 oz.

The citrate of potash may be replaced by 3 minims of saturated solution of oxalic acid.

Cold Blue Tone

Ammonia alum, 10 per cent. sol.	50 min.
Potassium ferricyanide, 10 per cent. sol.	10 min.
Potassium oxalate, 10 per cent. sol.	30 min.
Ammonia iron alum, 10 per cent. sol.	12.5 min.
Hydrochloric acid, 10 per cent. sol.	2.5 min.
Water	1 oz.

In place of the oxalate, 15 minims of a 10 per cent. solution of Rochelle salts may be used.

Gray-blue Tone

The same bath as the last, but with 5 mins. of a 10 per cent. solution of tartaric acid instead of the alum, and without the hydrochloric acid.

Bright Blue Tone

Ammonia iron alum, 10 per cent. sol.	50 min.
Potassium bromide, 10 per cent. sol.	30 min.
Hydrochloric acid, 10 per cent. sol.	5 min.
Water	1 oz.

By treating prints toned in the above baths with a .01 per cent. solution of carbonate of soda or ammonia, reddish-violet tints are obtained, and greenish-blue to green tones by immersing them in:

Sodium sulphide, 10 per cent. sol.	0.5 min.
Hydrochloric acid	0.5 min.
Water	1 oz.

Care must be taken not to leave the prints too long in this, or they will turn black.

Red Tones with a Brown Tinge

Potassium citrate, 10 per cent. sol.	150 min.
Copper sulphate, 10 per cent. sol.	24 min.
Potassium ferricyanide, 10 per cent. sol.	18 min.
Ammonia alum, sat. sol.	60 min
Water	1 oz.

Brick Red Tones

Potassium citrate, 10 per cent. sol.	75 min.
Copper sulphate, 10 per cent. sol.	24 min.
Potassium ferricyanide, 10 per cent. sol.	18 min.
Ammonium carbonate, 10 per cent. sol.	6 min.
Water	1 oz.

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This bath has a tendency to give double tones, that is, the deep shadows show a blackish tinge. A very beautiful cherry-red tint with a violet shade is obtained by replacing the citrate solution in above bath with quarter-ounce of 10 per cent. solution of ammonium oxalate, but the whites are often tinged.

Red-brown Tones

Potassium oxalate, 10 per cent. sol.	60 min.
Copper sulphate, 10 per cent. sol.	24 min.
Potassium ferricyanide, 10 per cent. sol.	18 min.
Tartaric acid, 10 per cent. sol.	6 min.
Water	1 oz.

A faint tinge is imparted to the whites of this bath. If the tartaric acid is replaced by acetic acid a browner tone is obtained. If the quantity of oxalate is doubled, and 60 minims of alum sat. sol. added to the above, a purer brown is obtained with tinged whites, which give the effect almost of toned papers.

Coppery-red Tones

Ammonium oxalate, 10 per cent. sol.	120 min.
Copper sulphate, 10 per cent. sol.	24 min.
Potassium ferricyanide, 10 per cent. sol.	18 min.
Oxalic acid, sat. sol.	6 min.
Water	1 oz.

This gives a slight tinge to the whites.

A mixture of a ferricyanide and an alkaline halide produces instant conversion of the image into the corresponding silver halide. Such solutions can be kept as stock solutions; they do not reduce the image, nor attack the gelatin.

The bleaching bath for the print, which should be previously well soaked in water, should be:

Potassium ferricyanide	6 gr.
Potassium bromide	2½ gr.
Water	1 oz.

The image bleaches instantly, and should then be well washed and treated with the sulphuretted hydrogen bath (see the acidulated sodium sulphide bath given above), or ammonium sulphide or sodium sulphide, and for the latter the bath should be:

Sodium sulphide	50 gr.
Sodium sulphite	50 gr.
Water	1 oz.

For use, one part of this should be diluted with nine parts of water.

A 1 per cent. solution of Schlippe's salt gives reddish-brown tones, which are redder than the bromized prints thus treated. A red-brown is also obtained by using:

Uranium nitrate	18 gr.
Potassium bromide	9 gr.
Water	1 oz.

Blue tones are obtained by treatment with:

Ammonia iron alum	12 gr.
Potassium bromide	6 gr.
Hydrochloric acid	2 min.
Water	1 oz.

If in this bath the whites turn yellow, they should be well washed with a 0.3 per cent. solution of hydrochloric acid.

Toning with Mercury Salts

In this, as already pointed out, the image is bleached with a mercury compound, and the bath should be:

Mercuric chloride	6 gr.
Potassium bromide	6 gr.
Water	1 oz.

When thoroughly bleached, wash well, and then treat with the following solutions to obtain the various colors:

Grayish black, as 1 per cent. solution of hypo.

Grayish violet, immerse in:

Hypo	5 gr.
Acid sulphite of soda	2½ gr.
Water	1 oz.

Brown to violet black:

Hypo	9 gr.
Copper sulphate	9 gr.
Water	1 oz.

If to the above a drop or two of a 10 per cent. solution of sodium carbonate be added, the tones are darker.

Brownish violet:

Hypo	6 gr.
Silver nitrate	9 gr.
Water	1 oz.

Blackish violet: Treat the print with a 1 per cent. solution of acid sulphite of soda.—*British Journal of Photography.*

COLORED POST-CARDS

FROM one to ten dollars should be the cash value of every negative. It is a waste of time and money to furnish material and work up a picture for less, and one will find the more thought and care expended on a picture the greater will be the money value.

I am an enthusiastic kodaker myself, but I am just as enthusiastic after the almighty dollar.

Of course, some people can make more money with one class of pictures than another, and nearly every amateur I know seems to specialize on the ordinary post-cards, while I could never make them pay for the material used, much less my time.

So many people seem to think because a post-card is small, not mounted, and only costs a dime, that one is about all they must buy at one time, and very seldom can I persuade them to buy a whole dozen, and it is really a loss to take less than a dozen when they sell as low as one dollar a dozen.

Photography, though, has many variations,

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and there are many different ways of taming the dollar, so it will make its home with one, than in taking plain post-cards.

I have made lots of money making colored post-cards in the following way:

My camera is a 5 x 7 plate camera, so as it takes a larger picture that I use on a card, I had to invent a way to make these cards as I wished.

I got fifteen Collins ten-ply mounting beads, cut them in 5 x 7 size—black in color. A post-card is placed in the *exact* centre of the mount, and an opening cut so the post-card will fit in it. A nickel is placed half on the upper middle of the opening, and a finger slot is cut out.

Passe-partout binding is then stuck criss-cross across the four corners. These strips should be on the back of the card, so they will not interfere with the negative. Wet the tips of the corners of the post-cards on the back, and stick them in the opening. Just a tiny bit of dampness is needed to hold them to the binding, so they will hold perfectly straight while in the holders. These cards are then loaded in the plate-holders like one would load an ordinary plate.

Now fix the camera exactly as wanted and focus on the helper or a friend as if he were the sitter. Even put the plate-holder in place and arrange all reflectors, draperies, etc., handy, so there will be no needless delay when a sitter does come.

When someone comes for a picture, find what they want then while fixing things that could not be fixed before their coming, talk of any and everything but picture-making, and when ready to take the picture, *don't* say the usual idiotic "look pleasant" or "all's ready." In fact, just keep up the conversation and snap all you can before they know what you are about.

These pictures are taken direct on the post-card.

Did you ever notice, when anyone comes to have their picture made they never look natural? They always look either self-conscious and out of sorts or too smug for beauty. This is because they are self-conscious. They fidget around until told to "look pleasant," when they instantly drop into a rigid, hypnotic position until the pain is over. This invariably gives them a strained, unnatural look that is likely to cause dissatisfaction when the finished print is presented to be cashed.

Not many people understand what the photographer is doing anyway, so the best way is to place them in the position wanted, then talk of some current interest until the reflector or anything else is fixed that cannot be fixed until the sitter is in position. By this time they are relaxed, and are only waiting for you to stick your head under the focusing cloth to resume their rigidity.

As the camera and plate-holders are already in position, just walk over and snap their picture before they do any "fixing." After taking as many as wanted of these cards, they are developed in any good developer, weakened down to about half the strength necessary for negatives, until the barest outline is visible. Then fix the cards. I would suppose any good developer and fixing-bath would do, but personally, I use the following developer:

Water	20 oz.
Ortol	10 gr.
Hydrochinon	20 gr.
Sod. sulphite	200 gr.
Sod. carbonate	200 gr.

Dissolve each chemical in the order named, then add enough bromide to keep the whites clear. This will be about 30 drops of the 10 per cent. solution to the above amount of solution.

After developing, wash through one water and fix in a chrome alum fixing-bath. This bath is stainless and the cards will not be likely to blister.

Thoroughly dissolve 8 ounces of hypo in 16 ounces of water. Then in 10 ounces of clear water dissolve one-half ounce each of chrome alum and metabisulphite. When both solutions are clear, pour the last solution into the hypo, stirring all the time. Special washing is not necessary, as the fading of the image doesn't matter. Three or four changes of water will be all that is necessary.

The pictures are now ready to color. Any good water-color can be used, but be sure to use plenty lintless blotters. Directions will come with water-colors how to use them. I prefer either matte-surface or the linen finish cards, as these show up better I think.

Should there be tiny stress-marks on the cards, remove them with a bit of cotton dipped in either alcohol or in a solution of four or five drops of ammonia in a half ounce of water *before* coloring.

NOW FOR A FEW PRECAUTIONS

The faintest outline only is desired, as the colors will fill in the rest.

Finish the cards as soon as possible, while the memory is fresh with the customer, and you will have a truer picture. But if one should be at all forgetful, by all means note down in a memorandum the color of eyes, hair, and clothes.

Use a solid background and color in one to suit the picture.

Use a piece of needle-paper with a post-card opening cut in the exact centre, pasted on the ground-glass so the picture will be on the card.

Of course, when using a post-card size camera no card holders are necessary, the cards being placed directly into the holders. The card-holders are to be made to fit the camera used.

There are several things to be said in favor of these cards. One can give a dozen different posings with less expense than making one dozen cards from one negative. There is no retouching to be done. The freckled-face girl, who hates her freckles, will have a beautiful lily-and-rose complexion that will cause her to order a good many more than the freckled kind.

Of course, these cards will develop into negatives; but as such a faint outline shows this makes no difference after the coloring.

In this, as in everything else in photography, only experience will teach the right exposure, the right development and coloring. I have given the outline to go by, but I cannot give the practice that counts toward perfection.—C. B. PARKS.

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About Varnishing

The varnishing of negatives is a custom which in America is more honored in the breach than in the observance. Varnishing is one of the things which was more necessary in collodion days than it is today, and so it has gradually fallen out of fashion. The chief uses of varnish were two: First, it protected the rather delicate collodion film from scratches and similar injuries, and, second, it protected from chemical dangers, both from active staining and from the slower and more insidious effects of the action of time. The gelatin negative is sufficiently tough to stand a wonderful amount of careless handling, but it is still liable to stains, especially silver stains.

Gelatin, as everyone knows, will absorb moisture, not only when it is placed to soak in a dish, but whenever there is dampness in the air. There are more or less free silver salts in many printing papers, and this free silver will stick to moisture. Hence, when a negative which is not bone dry is set to print there is always a liability to silver staining, sufficiently pronounced to spoil the negative. In England and some other European countries, where they encounter fogs and other atmospheric conditions more artistic than comfortable, we believe that the varnishing of negatives is common. It certainly is a good plan, even in parts of this country, to varnish any negatives which are likely to have any permanent value. There are many varnishes on the market, and the formulæ are legion. The one which I use is made by dissolving six ounces of best white hard varnish (which I get from a paint store) in ten ounces of alcohol. The base of them all (for some are compounded of several ingredients) is some hard varnish dissolved in alcohol. In all instructions for varnishing the direction is to "well warm the plate before applying." Unfortunately, they too often neglect to add that the negative must be allowed to cool again before the varnish is flowed on. If the varnish is applied when the film is still hot, the alcohol in it evaporates too quickly, and the varnish sets in ridges. The heating of the plate is merely to insure that it is quite dry. It should then be allowed to almost cool. The plate must be dry or the varnish may look milky—not to mention other possible ills; and it must be allowed to cool, or the varnish will prove troublesome in its flow. The varnishing itself is a matter of "knack." Little can be said about doing this beyond giving the usual instructions, adding that the movements must be continuous, neither hurried nor halting, or ridges may result. Hold the plate by its left lower corner in the left hand and pour a liberal supply of varnish onto the centre of the plate; tilt the plate so that the varnish flows diagonally across it toward the far right-hand corner; then backward across the top of the plate to the upper left-hand corner. The whole of the upper half of the film is now coated; tilt the plate to bring the flow toward the thumb, and just before it can touch the thumb tilt the plate toward the lower right-hand corner. This last sweep should cover all the uncovered portion of the plate, and the varnish can then be flowed from the lower right-hand corner back into a bottle. After one or two attempts an even flow will be attained. The plate should be stood on edge to dry, with its lower edge resting on a piece of blotting-paper. In a few minutes it will have set, with a smooth, even surface. The remaining solvent or solvents must be driven off by heating the negative rather hotter than the hand can bear, when the film will set very hard and brilliant.

Varnish poured onto a dry, slightly-warmed negative seems to almost form a part of the film itself, rather than a mere coating. Probably the pores of the film open and the varnish penetrates into them, forming a very close alliance.

Overprinted Bromide Prints

Overprinted and overdeveloped bromide prints can be reduced to any degree, depending upon the time they are kept in the following solution:

Hyposulphite of soda .	1 oz.	166 gm.
Potash alum (powdered)	1 oz.	166 gm.
Bisulphite of soda . .	½ oz.	83 gm.
Pour over boiling water .	6 oz.	1000 c.c.

Keep the solution warm during the operation—the warmer, the quicker it acts. Place the dark prints in this solution, and as soon as the desired reduction has taken place, put in water for final washing, which stops further reduction. Prints to be reduced must be well alumed, and preferably dried (for the gelatin to set), before being placed in the warm solution, as otherwise blisters might take place.

Storage of Printing Papers

Some cautionary advice which cannot be too often emphasized is contained in a letter to the Ansco journal, *Portrait*, from Mr. J. W. Haines, who writes:

"I find in many studios, especially in the smaller towns, that the paper stock is kept in the dark-room or printing-room on a shelf directly over or within a few inches of the sink, which is nearly always damp, having trays of water, hypo bath, and often old developer standing in it. In many instances the floor of the room is saturated with hypo and other chemicals, making the room unfit to keep or handle any paper in.

"During rainy weather the room becomes so damp, the paper absorbs so much moisture that it shows—after being developed—a granular effect; also small round white spots, or in some cases white streaks, and in extreme cases of moisture, mildew spots show. At other times, mildew is caused from the prints remaining in damp blotters. Blotters should be hung upon a line to dry after being used on wet prints, which would avoid a great deal of the trouble. The user of the damp paper, not knowing the trouble is caused from the paper being damp, naturally thinks the paper defective when shipped to him and aks for a replacement, when the manufacturers are not to blame for his losses.

"Photographic papers should be kept outside of the dark-room or printing-room except when being used. A box of considerable thickness, lined with tin, zinc, or some good metal, should be used to keep the papers when not in use,

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and would eliminate a great deal of the trouble and save the user, as well as the manufacturer, a lot of inconvenience and waste of time and material."

How to Recognize the Coated Side of Gaslight or Bromide Paper

This is not always an easy matter at first glance in the dark-room. Therefore it is very helpful to have more than one test or sign to guide one. (1) The coated side tends to curl inward. By running the finger tip along the edge of a sheet of paper one can generally feel which way the edge tends to curl. (2) If a sheet of coated paper be laid down on the dark-room table for a few seconds it will generally show a slight curl on one side or other of the sides. (3) If we try to make a sheet stand up on edge, this coated inward curved side is at once recognized. (4) The coated side is always the smoother side, whether it be glossy or not. So that if we hold the sheet flat, and about on a level with the eye, and catch the glint of the dark-room lamp, we can easily see the smoother, brighter, more light-reflecting, *i. e.*, coated, side. (5) Some workers apply the test of gripping a corner of the sheet between two teeth firmly for a second or two, and then slowly separating the teeth, when the coated side sticks to one of the teeth. This sign is not so definite as the following, which is somewhat similar. (6) Just slightly moisten the tip of the thumb and finger by touching with the tongue or lip. Grip the extreme corner of the sheet, and hold it firmly for about half a minute, when the coated side will be found sticking either to the finger or thumb.—*Amateur Photographer.*

Diagnosing Fog

Fog is usually attributed to the action of light on the plate before or during development, and while most fog may be due to this cause there are several kinds of fog which may occur even when the plate is handled under perfectly safe conditions of light.

Be sure your camera is light-tight, your holders do not leak light, your dark-room is safe without a light, and that your light itself is safe, and the greatest causes of fog are overcome.

Besides ordinary light fog there is atmospheric fog, chemical fog, and the peculiar form of chemical fog known as dichroic fog.

Atmospheric fog is most always recognized because it is a condition that exists and can be seen when the negative of a landscape is made. The plate may not record all that the eye sees, however, because this fog, which is most noticeable at great distances, is due to reflected ultra-violet and blue rays, from minute particles of dust, vapor, and water.

As all plates are super-sensitive to these light rays they record even more light than the eye sees, and for this reason distant mountains can be plainly seen under certain conditions when it is practically impossible to photograph them on an ordinary plate without a filter.

A color-sensitive plate and proper yellow filter that will absorb most of these ultra-violet and blue rays of reflected light will eliminate most of the haze that is troublesome in such landscape work. But as this atmospheric fog sometimes adds to the effectiveness of the landscape and gives a better idea of distance, or perspective, the color filter should be used with discrimination.

Chemical fog is an even reduction of silver all over the surface of the plate. It may be obtained with any plate if the developer is not suited to the plate, if the developer is also too warm or if development is forced. And many photographers do not realize that if fifteen minutes is the proper time for tank development at 65° F., increasing the temperature of the solution to 70° without a corresponding reduction in time of development means that development is being forced—and chemical fog is very likely to result.

Chemical fog is often blamed to the emulsion of the plate—but the emulsion is seldom at fault. Most all plates will work clean if only the proper developer is used. Emulsions must of necessity vary considerably and it is only reasonable that one developer will not be suited to all kinds of plates. A developer that is too strong will often cause chemical fog and the addition of water and bromide will remedy the trouble, but the formula recommended by the manufacturer should always be followed to secure the best results.

Another form of chemical fog is that known as dichroic fog, which is pink by transmitted light and green by reflected light. The cause of this peculiar form of fog is the solution of some of the silver salt by the developer and its precipitation in this very fine colloidal state through the film.

It is most noticeable when there is any solvent of silver, such as hypo, in the developer. Dichroic fog was very common in the early days of the gelatin process, when plates were developed with pyro-ammonia, and even now most plates would give it if forced in development with pyro-ammonia or a developer containing some similar silver solvent. Examples of dichroic fog may be found in most any studio containing negatives made in the early dry plate days.

This fog is most likely to be noticed on a thickly coated plate or film that has had extremely long development, but it may appear at any time with any plate or film if the developer has become contaminated with hypo or any other chemical that is a solvent of silver.

When it makes its appearance it can be removed by treating the negative with a very dilute solution of the permanganate acid reducer, which should remove the fog without appreciably affecting the image.

A fog, rather different in character from dichroic fog, that appears as an iridescent scum on the surface of old plates, is often due to their having been subjected to gas fumes. This surface fog undoubtedly consists of silver sulphide, in which case it cannot be removed.

Regardless of its nature, fog will degrade the quality of a negative to such an extent that much of the beauty of the original lighting is lost in the final result—the print.—*Photo-Digest.*

Matting Bromide Prints on Glossy and Silky Paper

With the considerable increase in price of printing materials, it is a greater tie than ever

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to obtain small packets of a matt surface for occasional requirements, when the principal use is for glossy or silky surface. Such purchasing of the small packets can be easily dispensed with by reverting to a very simple method, at the same time giving a result it is hard to beat. To those who are acquainted with the double-transfer carbon process the method will be obvious. With a piece of opal or very fine ground glass, wash thoroughly, dry, and rub French chalk *well* into it with a cotton-wool pad, afterward lightly dust off. The glossy print must then be soaked in water at 90° F. for a few minutes, the time varying according to whether a wet or dry print is commenced with, and also if the print is on a specially hardened emulsion paper. As soon as it feels slimy—not actually soft—place it in a dish of clean, cold water wherein is the piece of opal—matt surface up. Now bring the two slowly in contact with each other, taking care to avoid air-bells, when take same out of the dish and stand up to drain. After a few minutes apply a squeegee to the back of the print, commencing gently, and gradually increase the pressure until the print has lost most of its excessive moisture. Use a piece of plain paper between the back of the print and the squeegee. The opal should now be stood in a room for the print to dry *spontaneously*, when after a few hours the print should leave the opal of its own accord with a beautiful, velvety matt surface.—*Amateur Photographer.*

Economy in Plates in Copying

Wishing to copy a large number of prints with a minimum expenditure of plates, I set about devising an economical method with the material I had to hand.

As all the prints were quarter-plate size, or very little less, and as the reproductions were not to be larger than half-plate to whole-plate, I considered that a very small negative of each would be sufficient for the purpose.

I found that I had two dozen quarter-plates, but decided to keep these for emergencies, so I overhauled my stock and found a dozen unopened whole-plates and a dozen 10 x 8. Both packets were Imperial fine-grain ordinary, *backed.*

Now, first of all, the idea flashed across my mind, "Cut them up to the size you want." Second considerations, however, produced the following scheme:

The whole-plate was diagrammed out on paper so as to give me eight divisions, each measuring 3¼ x 2½, or half a quarter-plate, so that the whole packet of a dozen whole-plates would yield material for 96 exposures.

Considering the 10 x 8 plate in the same manner, I found it would give me sixteen divisions, each 2½ x 2, the whole dozen yielding material for 192 exposures.

Then I was confronted with the difficulty of cutting up the plates—they were "backed." Neither wheel cutter nor diamond would work over backing, and backing was indispensable. However, the trouble was got over in this wise: To take the whole-plate as an example. A rectangle, exactly 8½ x 6½, was drawn out upon a sheet of white paper, and was divided up so as to give eight divisions, each 3¼ x 2½. Then each division was pencilled around its inside ⅛ inch from its margin, showing a space 3 x 1⅞ inches, thus leaving a kind of "rebate." This was my focussing guide, and was to be placed against the ground-glass focussing screen of my camera—a Koresco enlarger. Of course, any camera of sufficiently large size will do. The prints to be copied were arranged (under glass in a large printing frame, or picture frame, fastened to the copy board) so that each print was focussed and brought *well within* its respective space on the focussing screen.

Naturally all the prints must be similar in character, *i. e.*, of the same color and depth, so that exposure would be correct for all. Should they vary in depth, then half may be arranged upon one side and the remainder on the other, the negative plate being masked for the two exposures necessary. Should the prints vary in size, then they must be so arranged that each print occupies two or four spaces in the "guide," according to its particular size. For instance, there may be four prints of a size each to fill one of the guide spaces, and two prints that would each take the space of two guide spaces; and so on.

The finished and dried negative may be cut up so as to give separate negatives by any frame maker or glass dealer with a diamond. A wheel cutter is a little risky with large plates.

Carriers for these small negatives are easily made out of cardboard.

It will readily be seen that one is not limited to print copying, and that specimens, such as shells, small curios, or coins, are equally adaptable to similar arrangements.—Sydney H. Carr, in *Amateur Photographer.*

Spacing in Portraiture

The most common mistake is to leave too much space at the top, too much head-room as it is called. This makes the figure look as if it were falling out of the picture—a most uneasy effect; the figure is dwarfed, squatty, and insignificant looking. The raising of the head gives height, stability, and dignity. Another mistake is not leaving enough space in front of a profile. This produces a crowded effect, and the figure appears to be leaving the picture instead of coming into it. Of course, the pose and general composition of the picture must be considered when deciding the proportions of space around the figure, but, as a rule, the following suggestions will be found helpful: When printing a bust portrait the head should be placed well up on the paper. The same rule will apply when printing a three-quarter figure. When printing a full-length portrait the space above the head should be slightly larger than the space below the feet. When printing a full-face portrait, either bust, three-quarter or full-length, it is, as a rule, safe to leave equal margins at the sides of the figure. When the head is slightly turned the margins at the sides may usually be equal. When printing from a profile or three-quarter face portrait more space should be allowed in the print in front of the face than behind it. These are only general

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rules; they must be applied with care and thought. No set of rules can ever be made to take the place of good taste and judgment.—*The Professional Photographer.*

Rapid Stand Development

Both adurol and metolquinol have been, in our experience, most successful in producing good-quality negatives by rapid "vertical" development, and for the production of a number of negatives from plates that have been fairly well exposed on subjects with similar lighting, the former will be found hard to beat. The following is a recommended formula:

Sulphite of soda	8 oz.
Carbonate of potash	6 oz.
Water	20 oz.

When all are dissolved add—

Adurol	1 oz.

For use, take one part of this solution and add twenty parts of water. Correctly exposed plates will fully develop in this in about ten minutes.

To Renovate Camera Bellows

To renovate camera bellows that have faded through long exposure to light, the following may be used:

White of one egg,
beat thoroughly and add gradually—

Sperm oil	1 oz.
Oil of turpentine	½ oz.

then add—

Acetic acid	1 dr.
Glycerin	1 dr.

The mixture must be continually beaten, and then add—

Columbian spirit	1 oz.
Water	1 oz.

and make the total bulk up to 6 oz. with water. To color this add Bismarck brown and a little alkanet root, and allow to stand with occasional shaking until the color is deep enough; about 40 grains of dye will be required. Good leather revivers can be obtained from any oil shop or saddler's, and these can easily be colored with the above dyes, and they are cheaper.

Practical Washing

Physically, a solution of hypo always descends to the bottom of any receptacle containing water. You may demonstrate this by coloring it; therefore, in the case of prints or plates, why allow running water or any motion to be imparted to them when we have such a simple law practically doing the work for us?

It is a fallacy to test the water in a washer for hypo. If the test shows hypo, then it is obvious that there is some to be got rid of; but if it does not show, is it the water or the prints that require to be tested? The prints, certainly; and yet in the majority of cases one is taken as proof of the other. To test the prints for hypo, arrange to have an extra print and cut in into four; they will all find a different place in the washer, and little pieces can be cut off from time to time and tried.

Varnish for Camera Leather Bellows

To 1 oz. methylated spirit add 15 gr. powdered shellac. When this is dissolved, add 5 gr. of gum sandarac and 2 gr. of gum mastic. Add enough nigrosin or any other finely ground black or dark-colored pigment to impart the desired effect. This point must be arrived at by trying the mixture on a bit of old leather glove, etc. To stiffen sagging bellows, apply a 30 gr. per ounce of hot-water solution of isinglass with a stiff brush. When dry, repeat the operation a second or even a third time. Let each coat dry very thoroughly before the next coat is applied.—L. T. K., *Amateur Photographer.*

Pressing Mounted Prints

Those who mount their prints in the form of multiple mounts, made up of art mounting papers, are often at a loss what to do to prevent the mount curling or cockling on drying. To prevent this, some form of press is an absolute necessity. If the mount is a large one, there is nothing to beat putting a sheet of clean blotting-paper over the face of the print and placing in a large book, piling others upon the top of it to make weight. The print and mount will then dry perfectly flat. In the case of smaller prints it is a good plan to utilize a printing frame of a size sufficient to take the mount. The mounted print is simply placed in the frame, and the back fixed into place; in this way flatness is obtained. This method is also of value in determining the position of the print upon the mount after being pasted, as we can see with certainty if it has been laid straight, and if any slight tendency is noticed the print may be altered before drying in that position.—*Amateur Photographer.*

Soft Bromide Prints from Hard Negatives

It happens occasionally that a negative gets a little over-developed and prints hard, and it becomes very difficult to get a nice soft result. This defect often arises in hot weather, when developers are more energetic than usual, especially when developing in tanks, or dealing with panchromatic plates in total darkness. One is nervous about reducing such negatives, as there is always a certain amount of risk attending that process. Then the negative may be retouched and varnished, and one naturally wishes to avoid cleaning all the work off; yet the ordinary developer often fails to give a satisfactory print, Amidol as in the usual formula will sometimes give the desired result, as it generally produces a softer effect than monomet and hydroquinone. But even normal amidol may fail, and then some special form of it is needed. I think I have found it in the following:

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A	
Amidol	120 gr.
Sodium sulphite	2 ozs.
Sulphuric acid (strong)	30 drops.
Water	10 ozs.

B	
Sodium carbonate	1 oz.
Water	10 ozs.

The proportions of soda solution (B) can be carried to suit the negative; the harder it is the more soda may be used, but the developer will soon discolor if much of the soda is added. This developer should be diluted to suit the negative—the more water the softer the print; it may be used very dilute.

The exposure will be found to be very short. A negative needing an exposure of thirty seconds for a normal developer will, perhaps, require only five seconds with this one. It will, of course, be noted that it contains no bromide. The image usually appears very quickly and total development is very short, sometimes not more than a minute before the print is sufficiently developed. The rapidity of development makes it difficult to handle a number of prints at once, but dilution of the developer greatly reduces its speed. One would expect that such rapid development would give prints of poor color—a rusty black, for instance—but the color is a good cold black in the shadows with silvery gray lights. The print, however, does not seem to tone very well with sulphide, as the whites become very yellow, probably due to the shortness of the exposure and development without bromide. They might tone by the hot hypo-alum process, but the color would probably be rather cold.

The stock solution (A) will not keep very long, and as it may be regarded as an emergency developer only, it is best to make it up in small quantities from time to time when required. It may be thought that so rapid a developer would be beyond control when a number of prints are wanted alike, but by using the developer considerably diluted the speed is reduced, and if only a small number of prints are put into the developing dish at one time it is not difficult to secure uniformity.—*British Journal of Photography.*

To Blacken Aluminium Camera Parts

The employment of aluminium in the construction of cameras and other photographic apparatus is steadily on the increase, and it may be of service to workers, both amateur and professional, to know how to blacken or reblacken this metal should such an operation become necessary at any time. The article to be treated should first be thoroughly cleaned with fine emery powder, well washed to remove all dust or grease, and then immersed for twenty-four hours in a saturated solution of chloride of zinc. This can be made by dissolving clean scrap zinc sheet in muriatic acid; add to this ten to twenty parts of hot water, and to the resulting solution a small quantity of sulphate of copper (in the proportion of one ounce to a gallon of solution), and a few drops of clear muriatic acid. When dry the black surface is liable to damage, and can be removed by rubbing, but to ensure its permanence it is only necessary to lacquer the articles by dipping in the usual way. Another method is to immerse the aluminium, after cleaning and washing as already described, in a solution of—

Ferrous sulphate	½ oz.
White arsenic	½ oz.
Hydrochloric acid	6 oz.

Mix and dissolve these ingredients, and add

Water	6 oz.

Keep the articles immersed until the desired color is reached, then dry off carefully by the use of fine sawdust, and lacquer. All reasonable precautions must be observed in compounding and using either of the baths above described on account of the poisonous nature of most of the constituents. The solutions should be kept and used in earthenware or glass vessels only, and should be stored out of the reach of children or other persons not acquainted with the dangerous character of the preparations.—*Amateur Photographer.*

Rough-surface Prints

I shall never forget (writes Mr. F. M. Sutcliffe in the *Yorkshire Weekly Post*) the look of horror on the face of a brother photographer who came into my mounting-room one day as I was busy mangling some albumen prints face upward on a Globe enameller. I quite think he thought I had taken leave of my senses till I showed him how much better the roughened prints were than the smooth ones. He admitted they were better, and said that although he had had a similar machine in his place for years it had never struck him to use it so. The grain imparted is similar to that on some of the canvas bromide papers. The photographer who has hitherto used only smooth printing papers will be most agreeably surprised when he tries some of the many papers on the market which have a decided grain. He will say, on seeing the prints on the latter, that he had no idea his negatives were so good till he used the rough paper. I remember once having an 8 x 6 negative of some shipping, which was unpleasantly sharp—every rope and mast might have been ruled with a pen; on rough platinotype paper the prints were passable. When, however, I made an enlarged plate 12 x 10 from the 8 x 6 plate, the larger prints were not worth looking at, so fearfully hard and sharp were they. Not till printed on carbon and transferred on to some rough cream-toned transfer paper of decided texture did the good qualities of the negative appear, for the rendering of the sky, water, etc., was all right. Even little negatives, quarter-plate and 5 x 4, give far more harmonious prints on what are known as crayon or etching papers than on smooth. The only person who objects to these prints of decided texture is the one who has to copy them, either for reproduction or other purposes. To make a good copy of a sepia carbon print on rough paper is a good test of the skill of the operator. He needs a panchromatic plate and a filter. If he does his work well his copy will be equal to the original.

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Stand, Time, and Factorial Development

Edinol

The late Dr. Englisch suggests the following formula for stand development:

Edinol	1 gm.
Sodium sulphite	1 gm.
Water	1000 c.c.

and add for under-exposure—

Potassium or sodium carbonate, 5 gms.

For over-exposure—

Potassium or sodium carbonate, 2 gms.

—*D. Phot. Kal.*

Pyrocatechin Stand Developer

Dr. Linden recommends the following formula:

A

Pyrocatechin	20 gms.
Acetone sulphite	14 gms.
(Or sodium sulphite	100 gms.)
Boiled water	1000 c.c.

B

Sodium tribasic phosphate	200 gms.
Boiled water	1000 c.c.

For use the above are mixed in equal parts, and the mixture diluted with thirty times its volume of water. Duration of development, about an hour.—*Phot. Mitt.*

Pyro Stand Developer

G. T. Harris gives the following formula for a pyro tank developer:

Pyro	20 grs.
Sodium sulphite	120 grs.
Potass. metabisulphite	30 grs.
Sodium carbonate	240 grs.
Water	40 ozs.

The plates are fixed in an acid bath, or if the bath shows any signs of staining a 1 per cent. solution of sodium bisulphite is used for a few minutes between development and fixing. The time of development at 60° Fahr. will be from ten to fifteen minutes. The writer compares nine months' work, representing hundreds of negatives, developed with the tank, and a similar period developing in trays, to the advantage of the former. A point of importance as regards freedom from stain is to prepare the developer at the time of use.—*British Journal of Photography.*

Stand Development with Acid Diamidophenol

G. T. Harris, as the result of practical trials made to decide between pyro and diamidophenol for tank development on a commercial scale, recommends the latter; the formula adopted was as follows:

Sodium sulphite	500 grs.	28.5 gms.
Potassium metabisulphite	100 grs.	5.7 gms.
Potassium bromide	10 grs.	0.6 gms.
Diamidophenol	50 grs.	2.8 gms.
Water	40 ozs.	1000 c.c.

Three dipping-baths were used, each containing 40 ozs. One of these dipping-baths had 400 grs. of sodium sulphite and 200 grs. of potassium metabisulphite in place of the quantities given above, and any plates suspected of over-exposure were first placed in the more restrained bath. The time of development in the normal solution necessary to give good printing density averaged about 10 minutes.

There were no markings of somewhat less density than the rest of the plate, which sometimes appear on parts of the plate near the top and bottom of the tank when using pyro.—*British Journal of Photography.*

In finding the time necessary for development of correctly exposed plates, R. Child Bayley exposes three quarter-plates by meter and develops side by side in the solution selected, noting the temperature. One plate is taken out as soon as it is judged that there is any likelihood of development being complete, the second when it is undoubtedly properly developed, and the third when it has had about as much longer as the second had than the first. The times being noted, it is seen from the finished plates which may be taken as giving the standard time for that temperature. It is essential to select a suitable subject—say, a building with sun on one portion and other parts in shadow, and with a certain proportion of sky.—*Photography.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patients as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Printer. A. R. Rancier. 1193424.
M. P. Film. L. Miller. 1193175.
M. P. Magazine. W. A. Dietze. 14173 (reissue).
M. P. Apparatus. W. B. Hausman. 1192894.
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Plate Holder. J. G. Miles. 1195062.
Developing Tank. J. E. Bryant. 1194707.
Film Winder. C. C. and A. W. Fay. 1194982.
Exposure Meter. G. F. Wynne. 1194919
M. P. Machine. P. F. Krug. 1194753.
X-ray Tube. P. A. Farrelly. 1195157.
Camera. J. Becker. 1195947–8.
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TECHNIQUE IN PHOTOGRAPHY[1]

By RYLAND W. PHILLIPS

As the technique of the painter's art means the mixing and blending of colors, so the technique of photography means the rendition of color values in harmonious relations.

Artistic compositions are the conceptions of artistic temperments; but without the mechanical and chemical knowledge of photographic mediums no photographer can be sure of his final results.

The master of photographic technique has at his finger-tips three essentials: balance of light, control of development, and knowledge of printing mediums. The first embraces a thorough knowledge of actinic light; the second, chemistry; the third, an understanding of the other two with a keen sense of shade.

No amount of manipulation in any one branch will overcome a mistake of one of the other branches. For example: No amount of manipulation in the darkroom will entirely overcome the mistake of a badly balanced or timed negative; likewise, a print from a poorly developed negative will never equal the result obtained from perfect development.

In arranging the light on a subject avoid colors as much as possible; the shadows should be of the same actinic color as the lights. Get your source of light to project as pure a ray as possible, and see to it that the shadows are of the same actinic color.

In developing, remember that the shadows stop before the high-lights (a few developers are exceptions); therefore, stop development when the shadows are right, prolong it and the original lighting relations will be changed. It seems to me that this rule is the foundation on which all developing manipulation is based. Prove this by making three equal exposures on the same lighting; under-develop one, over-develop the next, and correctly develop the third. Make a print from each negative on three pieces of the same paper, and study the results.

Printing seems the easiest stage in the

[1] A paper read before the Professional Photographer's Society of Pennsylvania.

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process of making a good photograph, yet there are comparatively few good printers. I am inclined to believe that this is due to lack of training for shade and tone; the eye does not carry shade unless well trained, and the printing of platinum papers requires the finest of optical judgment. The printer's main difficulty is in producing fine results from negatives badly lighted or developed, or both. His troubles in this direction are so frequent that in the use of the so-called gaslight papers he is compelled to become a thorough chemist. The underlying principle in printing is that sufficient light must penetrate the actinic surface to cause all the chemical parts to be relatively acted upon. While this is true also in making a negative it is much more often neglected in making prints.

It is impossible for me to give in the small space allotted anything but fundamental principles, as a long chapter for each of the three stages could hardly cover the subject.

Constant application of the three main points mentioned will help anyone who wishes to become a technical master of photography.

Every skylight man, every dark-room man, and every printer will have his own little tricks for producing a perfect sample of his work; but he will always admit these three principles, and with them in mind will be able to produce all effects, from the finely rounded, sharp photograph to the most elusive "fuzzy type."

THE MOVIES

By L. G. ROSE

MOVING pictures are being used more and more every day for commercial purposes, and commercial photographers are beginning to appreciate this fact and give considerable attention to this branch of the industry.

There seems to be quite a few possibilities for the use of moving pictures commercially, but just what the future will be is more than anyone cares to predict. We do know, however, that nearly every one is interested in the movies, and, whether they want to or not, photographers will have to sit up and take notice before long and get into the game.

There have been a number of books and magazine articles written on this subject, but all that I have read, and I have tried to read them all, have had little or no real practical information. Some of them have been grossly erroneous. For this reason, a photographer looking for practical instruction along this line has either had to blunder into it by himself or has had to go through the experience of working in the movie camps. Having spent considerable time in the moving-picture studios, both in the East and in California, I gathered considerable information which may prove of interest to other photographers.

While the average photographer doing moving-picture work could not expect to have as elaborate an equipment as the movie camps, at the same time he may follow a good many of their methods of working on a small scale to his advantage.

The movie studios of the East, in and around New York and Philadelphia, are mostly large glass affairs—that is, a large stage covered with glass—and right here it might be a good time to say that the selection of glass for the skylight is somewhat important. Most of the ground, ribbed, and hammered glass has a greenish tint, and the better class of Eastern studios, as well as some of the Western indoor studios, use a white ribbed-glass which makes a faster and softer light. The Western studios, for about nine months of the year, work on an open stage, using diffused sun-

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light; but with this the shadows are sometimes a little heavy and large reflectors have to be used much in the same way as a portrait photographer works.

Cameras

The cameras used by the larger companies were formerly all imported or of their own make, but of late American companies have turned out some very high-grade machines and they are rapidly supplanting the foreign make. In selecting a camera one now has a choice of those ranging in price from $30 to $1400 and up. Care, however, must be taken in the selection of a camera to see that a good movement is obtained, otherwise there will be trouble with alignment of the picture, static, etc. If it can be afforded, it is far better to get a camera with a movement having as little friction as possible in the operation of the film, as it is the friction of the film that causes static and most of the other troubles. Also, some provision is needed for mounting lenses of different focal length, as well as dissolving and fade-out attachments. Most of the camera men I have met, and in fact some of the best ones, are ex-machinists or of a mechanical trend of mind, as a camera man must have not only a knowledge of light values and photography in general but of the working of his camera, for moving-picture work requires considerable mechanical ingenuity. Attachments for making a great many of the trick effects seen in studio pictures are contrived by the camera men themselves, right on the job, but they are of little or no practical use to anybody doing commercial work.

Some of the better cameras now have what is known as a shutter dissolve. The old method of making dissolves was by closing down the diaphragm of the lens, but this had several disadvantages, one of them being that, in dissolving out on an interior and then undertaking to dissolve in on a marine or other brightly lighted subject, it was hard to get the dissolve even, while the shutter dissolves are even, as they are mechanically operated.

Trick photography cannot be fully explained in a short article of this nature. If interested in this branch of the game it is well to purchase one of several books now on the market which give the principles quite clearly. The practical part can easily be worked out on your own camera.

The lenses used on motion-picture cameras are a great deal faster than those used on still cameras, some of them working at very large apertures, *f*/2.5 and *f*/3.5. Due to their short focal length, of two to three and six inches, they have great depth of definition even at large openings, but have comparatively narrow angle of view, a two-inch lens having an angle of view of about thirty degrees, which makes it imperative that side lines be laid out before undertaking to make a picture, that is, if any of the action is close into the camera. There is no swing-back to help out, so one has to be very careful in setting up the camera to get the lines parallel.

In exposing, most of the successful camera men, especially those with the larger companies, use an exposure meter to get the time. I know that many of the old-time professional photographers will ridicule the idea of using an exposure meter. I did myself at first. But when it comes to exposing film at the rate of a foot a second, and, at that, exposing on a subject that cannot be repeated, you can see that it is essential that results be obtained, and a meter will surely help. Not only that, you cannot revert to different grades of paper, intensification, reduction, etc., to get results. Results must be obtained through first exposure. It is best to get a meter built especially for motion-picture work, as it saves calculation.

The system used to identify the different scenes on the films is to have a small blackboard or slate and mark on it the identifying information. It may then be held up close to the camera and photographed, by giving about a half turn of the camera crank.

In regular studio work, both for interior and exterior scenes, the actors, of course, use make-up. This does away with the need of retouching skin imperfections, etc., and makes them photograph better. They, however, are not

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made-up as one would naturally think, using reds and pure whites, but for the best effect they use light brown, a little more yellow than sunburn, and the eyes are darkened very little, some not at all. I mention this, as it strikes me that it could be very profitably used by photographers doing commercial work along fashion and art lines, where models are used, as it would save considerable work. Before photographing a scene it is rehearsed many times, and this could also be done by other photographers to their advantage, especially those doing commercial work for advertising.

For indoor work on rainy days some of the studios are equipped with very elaborate artificial lighting systems. Some of them use Cooper Hewitt mercury lights all the way from fifty to seventy-five lights on a set; others use arc lamps of various makes, and studios doing commercial work use arc and the new type of high-powered Mazda lights. For anyone doing commercial moving-picture work artificial lighting would have to be resorted to many times. Outdoor work at night can be accomplished and nice effects obtained by the use of what are known as flares. These are nothing more nor less than continuous magnesium lights. Two or three will light up quite a large area, and practically their only objection is that the smoke is liable to roll in front of the camera and spoil the effect.

Laboratory Work

The laboratory of a moving-picture concern is by far the most important part of the whole business, for it is here that all the best efforts of the camera man, directors, etc., would go for naught unless the laboratory is in the hands of capable people.

While the principles used in developing motion-picture films are the same as in developing dry plates, the mode of operation is somewhat different, and a dry plate man is a little out of place when he first undertakes to develop a rack or drum containing two hundred feet of film.

We have the choice of two modes of developing—the rack or drum system. The rack system is by far the better of the two, but the drum system is very economical for small batches of film. The rack system consists of winding, say, two hundred feet of film on a rack and immersing in a deep tank. The first operation with the rack system is what is known as wrapping, that is, winding the film on this rack. The film is attached to the rack by means of two rubber bands and a pin. Then the rack is revolved, the film being held in the hand, and is rapidly wound on the rack. This little stunt requires some practice to get it nice. The object of the rubber bands is to allow for stretch and take-up during the succeeding processes. In using the drum system the film is very easily wound on the drum, as the drum is round.

The next operation after the film is wrapped is that of soaking. The film is not usually placed into the developer immediately after being wrapped, as the developer would not take evenly upon it, so it is placed in what is known as a soaking bath, which consists of a very weak solution of carbonate of potash or carbonate of soda. After the film has soaked for four or five minutes it is transferred immediately into the developing bath.

As regards developing, nearly every laboratory man has his own pet formula. However, the companies manufacturing film furnish reliable formulas, so it would be useless for me to give a formula that would cover all cases. Some of the studios are using very fast formulas, some of them so fast that the image appears in five seconds, and the film is ready to come out in fifty-five seconds; while others use a longer development, of from ten to fifteen, or as much as twenty minutes. Both methods have their own advantages and followers, but, no matter what system you use, great care must be taken in the matter of temperature, as you cannot expect even results at variable temperatures and moving-picture film must be evenly developed.

After the film has been developed it is rinsed and then immersed in a fixing-bath. These fixing-baths are gigantic affairs holding as much sometimes as

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eight or nine hundred gallons. In fixing-baths there is as much variance of opinion as there is in developing: Some use chrome alum, others sulphate alum baths, and still others are using hypo and metabisulphite. Care also must be used in the mixing of fixing-baths, as too stringent a hardener cannot be employed, for in such case it would be liable to throw the film out of shape, and it would possibly be so bad that it would not fit a projection machine properly. For my part I like a meta-bisulphite bath better than any of them, as it can be strengthened up from time to time without any injurious effect to the film or bath.

When the film is fixed it is placed in a washing tank, and here again there are a number of different systems employed: There is the shower and the long tank method, and the single tank such as dry plate workers use. A combination of the shower and tank method is about the best, that is, the racks are first hung under the shower for about fifteen minutes and then transferred to the regular washing tank. This has the advantage that most of the hypo is eliminated under the shower.

After the film is washed comes one of the most important parts of the whole operation, that is, the drying of the negative film. Various studios, of course, use different systems of drying, nearly all of them being elaborate. Some even filter and wash the air that comes into the drying room. They also have control of the humidity and temperature of the room at all times. The drying room must be absolutely free from dust, as dust settling on a negative makes pinholes on the positive. A pinhole on the positive shows up very plainly on the screen; therefore a great deal of pains is taken to eliminate the dust. The temperature of the drying room also has a great deal to do with the resulting picture. Too long a time at drying, or too short a time, both have their effect. The time should not exceed from three to four hours.

Probably the best method of drying is by the use of drums. These drums are from twelve to fifteen feet in diameter and long enough to hold as much as a thousand or more feet of film, and they are slowly revolved by means of motive power. Some studios dry them directly on the racks as they come from washing. In my opinion this is not as satisfactory, as there are bound to be little stick-marks or creases showing in the dried film, where it goes over the corners of the rack, which are liable to cause trouble in printing.

After the negative film is dried it is taken to the assembling or cutting room, where it is gone over, first, to clean the back of it, and then to eliminate unnecessary parts. It is then in shape for printing. Here is another operation that requires great care. This room must also be free from dust.

There are numerous printing machines on the market—the step printer, the continuous printer, and the printing machines that print two sets of film at once, and some elaborate affairs that require little or no attention after they are started. But, for small lots of work, the average moving-picture camera, with a little ingenuity, can be converted into a passable printer.

The printing room should have means for regulating the temperature and humidity—otherwise there is quite a liability of static developing in printing machines and ruining film. After the positive film has been printed it follows much the same process as the negative film, excepting that a different developer is used—although quite good results can be obtained by using the same developer for positive and negative film. After the positive film comes out of the wash water some of it will need to be tinted or toned. The tinting baths consist of nothing more nor less than diluted aniline dyes. Some very pretty effects can be obtained by toning one color and tinting another. In fact, the whole picture may be made or spoiled by good or bad toning and tinting. Many an otherwise poor picture has been put over by skilful tinting and toning. Toning baths are rather unstable affairs and the same formula does not always work in different localities, due to water, quality of chemicals, etc. Formulas for toning baths appeared in these pages some time ago.

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After the positive film is dried it is ready for cutting and the insertion of titles. The usual method of making titles is to photograph them, one after another, turning the camera at about one-half speed, using two feet of film for three words of title. The original title should be of such a size that it will reduce down to the correct proportion of the film, which is $\frac{3}{4}$ by 1 inch. The title should be white letters on a black ground, so that on the screen they will show black letters on a white ground. Where only one copy of a title is wanted it can be made by using positive film in the camera with the emulsion side away from the lens, that is, the film in backward, and photographing titles made with black letters on a white ground. In this way the negative is used as a positive on the screen.

After the titles are inserted in the positive film it is ready for trial projection. In the big movie camps the pictures are projected with a powerful light on a comparatively small screen, which means that they have to stand critical scrutiny, and every little imperfection in the laboratory work shows up very plainly under these conditions. Therefore, if you ever have any film to sell to big companies, be sure that it is right before you send it in, as they do not look at it long if it is at all wrong.

The moving-picture companies all save their hypo baths and punchings from the perforating machine, etc., and these are turned over to refiners. You would certainly be surprised at the amount of money received from what some would consider waste products. They receive as much as ten to fifteen dollars from a barrel of hypo solution after it has been used two or three weeks.

I am often asked what are the chances to get into the movie game, that is, to work with the big companies on the cameras or in the laboratories. To be honest, the chances are small. The field for camera men with the big companies is very limited and getting more so every day. Right now, there is an over production of moving-picture plays, which means that camera men are out of work. The wages are small, with the exception of a few of the old timers, ranging all the way from twenty-five dollars on up. Some of the fabulous salaries we hear about originate in the minds of the press agents.

The laboratory, as a rule, presents a wider field, especially for men who have had high-class dark-room experience, and the salaries are some better to start. However, there is a great deal of cheap help used in the laboratories—boys and girls who work in the wrapping, printing, drying rooms, etc.—but in every laboratory there are two or three quite good positions for men who are capable.

PROPORTIONAL REDUCERS[1]

By KENNETH HUSE and ADOLPH H. NIETZ

A SHORT time ago there appeared in the *Australasian Photo-Review* and in *The British Journal of Photography* an article by Mr. Norman Deck on "A New Reducer for Negatives." The author suggests that by the use of a certain mixture of potassium permanganate and ammonium persulphate a proportionate action can be obtained through the entire range of the plate. He had no opportunity for making exact photometric tests, as he says, and consequently relied solely on visual comparison. Since he suggested at the conclusion of his paper that the subject should be investigated by someone who was in a position to make quantitative measurements, we have taken up the work and have also undertaken a short investigation of photographic reducers in general.

[1] Communication No. 39 from the Research Laboratory of the Eastman Kodak Company.

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As is pointed out in an editorial in *The British Journal* of August 14, 1916, reducers fall into three classes: (1) those which attack the highest densities most, typified by persulphate; (2) those which cut the lowest densities to a greater degree, such as the ferricyanide and hypo reducers; and (3), if there is such, a proportionate reducer—one which removes the same proportion of all densities—as is claimed for the formula published by Mr. Deck.

The present study has revealed the fact that nearly all of the commonly recommended reducers, except those of the persulphate type, have a greater effect on the lower densities, contrary to the claims made for some individual formulæ. On measurement, Mr. Deck's formula, however, proved to give nearly proportionate reduction, and by a slight modification we have obtained a formula for a reducer which acts proportionately on common types of emulsions. In all, fifteen formulæ were tried; these included most of the well-known reducers, such as ferricyanide, persulphate, permanganate, Belitski's, Eder's, iodin-potassium cyanide, bichromate, Deck's, and several other mixtures of permanganate or bichromate with persulphate. The formulæ used were taken from the *British Journal Almanac* for 1916.

In the work sensitometric strips were exposed, developed, and reduced under accurately controlled conditions. The emulsion used for the most part was Seed 23, coated on patent plate-glass to reduce the errors due to uneven coating, and as it was at once realized that any study of reducers should include the effect of size of grain and of the developer used, the same experiments were also carried out on Seed Process and Seed 30 plates, as being representative of slow and of high-speed emulsions. Development was carried out in metol-hydrochinon in a thermostat which controlled the temperature constant at 20° C. (68° F.) to within a tenth of a degree. Each strip was somewhat over-developed, *i. e.*, to a greater degree of contrast than is usually desirable, and was then read on a Keenig-Martens photometer, ordinary H. and D. methods being applied to the data. The strips were then reduced at constant temperature in the thermostat before mentioned, dried, and again read. The percentage of the original density removed by reduction from each sector-wheel step was plotted against the logarithm of the exposure for each particular density. This can be seen in Fig. 1.

It is apparent that reducers of the first class (Curve I), like persulphate, remove a greater percentage of the higher densities. Those of the second class remove a higher percentage of the lower densities; this class includes two varieties, the first, like potassium permanganate and potassium bichromate, do not reduce so much of the medium low densities (Curve II), while the second variety, such as Farmer's, Belitski's, Eder's, and iodin-potassium cyanide, cut well up into the half-tones (Curve III). Now, by inspection of Curves I and II, it will be seen that proper mixtures of reducers of these two types, such that each would still retain its chemical identity, would give more or less proportionate action. Theoretically, such a reducer would be one whose curve is a straight line parallel to the base of the diagram; that is to say, each step would have the same percentage reduction. This was Mr. Deck's aim, and Curve IV shows the action of his formula. It will be seen that this nearly fulfils the purpose, but by a slight modification we get Curve V, which more nearly approaches the desired straight line.

The desirability for a porportionate reducer may not be at once apparent, but the following considerations may help to make this clear. Although reducers are often employed to correct over-exposure, though this can be done only to a limited extent, they may also be used to correct an over-developed plate by reducing the densities in such a manner that the resultant effect is that of a correctly developed negative. This effect can be shown graphically by the curves of Fig. 2. Here I shows the characteristic H. and D. curve of a plate over-developed in a metol-hydrochinon developer. The degree of contrast and the extent of development are determined solely by the slope of the

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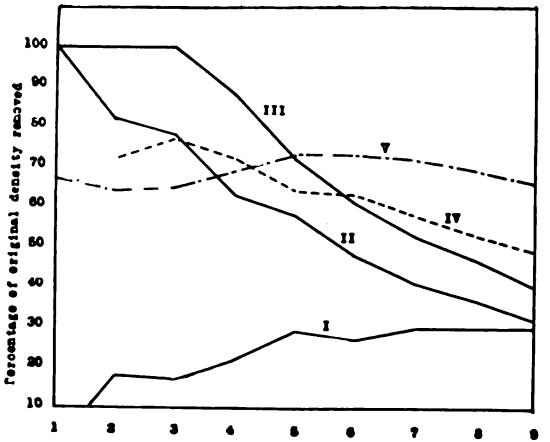


FIG. 1.—Characteristics of different types of photographic reducers on Seed 23 plate. Steps each representing a doubling of the exposure (logarithms of such exposure steps would be to the same scale).

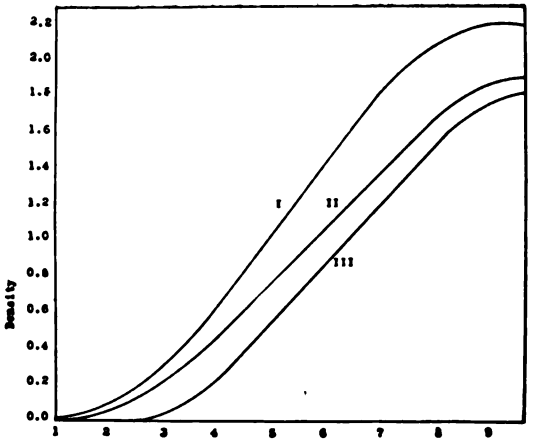


FIG. 2.—H and D curves for Seed 23 plate.

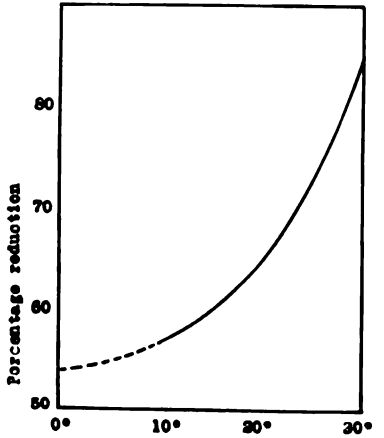


FIG. 3.—Effect of temperature on the percentage of the density removed by reduction.

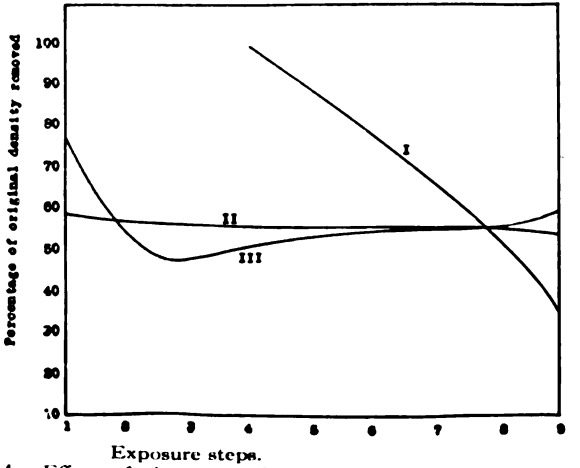


FIG. 4. Effect of character of plate on reduction with a proportionate reducer. All plates developed to about same degree of contrast.

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straight-line portion of the curve; that is, the greater the development, the steeper the slope. Curve II represents a correctly developed plate, which has a contrast of unity, so that doubling the exposure will double the resultant density. The office of a proportionate reducing agent is to transform Curve I to Curve II as nearly as possible, thus lowering each density proportionately, as is shown by the difference in the ordinates of the two curves. These were plotted from actual experiment data, and it will be found that the ordinate of any point on Curve II is very closely 25 per cent. less than the ordinate of the corresponding point of Curve I. On the other hand, the ferricyanide reducer gives Curve III, which shows at once that the slope remains practically unchanged, each density being lowered by the same amount. Hence the desired effect has not been accomplished, but the effect is that which would have been produced had the original Plate I received less exposure. In certain cases the contrast of the plate is even slightly increased, and this type of reducer is very useful for correcting over-exposure where the resultant negative is invariably flat or very dense. It is often stated that permanganate acts as a proportionate reducer, but we have found that permanganate changes the plate curve in almost the same manner as Farmer's reducer. We see, therefore, that none of the common reducers function as a true rectifier of over-development.

Mr. Deck's formula was next tried and the result is shown in Curve IV of Fig. 1. We have attempted to improve on this formula, and in so doing have used various proportions of permanganate and persulphate at different concentrations, so as to strike the proper balance between the two components, which act with widely different velocities on the silver deposit. The formula finally adopted was:

Solution A

Potassium permanganate	0.25 gm.
10 per cent. sulphuric acid	15.0 c.c.
Water	1000.0 c.c.

Solution B.

Ammonium persulphate	25.0 gm.
Water	1000.0 c.c.

Use 1 part of A to 3 of B. These solutions will keep well and should not be mixed until ready for use. The time of reduction required will be from one to three minutes, depending on the amount desired. Greater control of the action can be obtained by diluting the mixture with an equal amount of water. Reduction should be followed by immersion for five minutes in a 1 per cent. solution of potassium metabisulphite. The plate should then be washed for a short time. The action of this reducer is shown in Curve V, Fig. 1.

It was found in connection with this work that Mr. Deck's formula was much improved by the addition of the amount of sulphuric acid used in the above, as permanganate does not exert its full effect unless acidulated, and the absence of the acid also produces greater staining. Even with the acid, however, it is not quite so nearly proportionate in its action as the formula given above.

Conditions Affecting Reduction. Various statements have been made regarding the relative merits of reducing the negative after soaking it in water for some time and reducing dry. In the case of the proportionate reducer recommended, at least, not so much difference was found, except that wet negatives showed a greater tendency to lose fine shadow detail. With this formula it is therefore of some advantage to use dry negatives, and we believe that when it is so used the action will be uniform and satisfactory.

The question whether a hardening agent in the fixing bath affects reduction to any great extent was considered. Strips having had the same exposure and development were fixed part in plain hypo and part in a bath containing Velox Liquid Hardener, and then reduced under the same conditions throughout. The differences shown with the proportionate reducer were rather small, although a slightly greater and more uniform reduction was obtained with the plates fixed in plain hypo.

The effect of temperature upon the rapidity of reduction is shown graphically in Fig. 3. In obtaining this curve the average percentage reduction of the densities on the straight-line portion of

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the curve was taken at the three temperatures 12°, 20°, and 28° C. (54°, 68°, and 83° F.). The amount reduced increases rapidly with the temperature, although the proportionate nature of the reduction is not altered.

Another set of experiments was carried out to determine the effect of the size of grain and also of the developer used on the character of the reduction. In this work three representative plates were used, Seed Process (low speed), Seed 23 (medium speed), Seed 30 (high speed). Four sets of the three types of emulsion were developed in four different developers to about the same degress of contrast. These developers, namely, amidol, hydrochinon, ferrous oxalate, and pyro, varied widely as regards penetration and reduction potential. As for the effect of the size of grain, the results are shown in generalized curves in Fig. 4. Curve I is that of the Seed Process, showing that in fine-grained emulsions the fine shadow detail is more readily attacked, as might be expected. The results for Seed 23 and Seed 30 are shown by Curves II and III respectively. The action is most nearly proportionate on an emulsion of medium-sized grain, as is seen from the curve of the Seed 23 plate. It is impossible to predict from this preliminary data just what effect any particular reducer would have on a definite photographic material.

As far as developers are concerned, no fixed relation between degree of reduction and the character of the developer could be determined, although it was quickly evident that the developer used on the plate largely affects the action of the reducer. On the Seed Process, for instance, the greatest reduction was obtained on a negative developed in pyro; with Seed 23 on that developed in hydrochinon; and on Seed 30 a plate which had been developed in ferrous oxalate showed the most reduction.

THE FULL-FACE AND THREE-QUARTER VIEW. PART II[1]

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

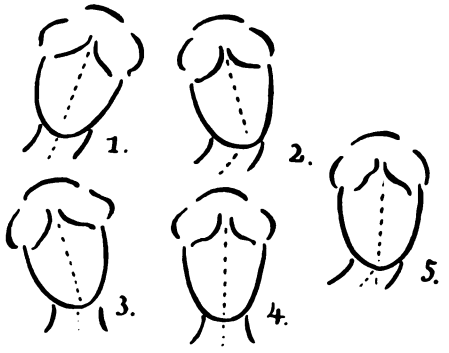
WE have agreed, I believe, that the normal three-quarter view, as seen in Figs. 4, 7, and 8, is the most popular, the easiest to manage, and also in most cases the most satisfactory one from an artistic point of view.

Let us now investigate when this particular view is seen at its best advantage. I have come to the conclusion that the simplest pose is always the best for portraiture, in this instance when the head is carried perfectly straight and easy, as in the Thuman painting (Fig. 10), or slightly reclining, as in Kuehn's photograph and Schmiechen's fancy head of Beatrice Cenci (Figs. 3 and 8). As soon as you move the head in any direction, upward, downward, or sideways, you get a slightly distorted or at least less clear and convincing composition of the three-quarter view in question. By lowering the chin you get a composition as in "Edelweiss," pleasing enough, but you have to sacrifice the line of one side of the neck, and comparatively few faces can stand the exaggerated length of the jawbone from the tip of the ear to the chin. It also slightly foreshortens the region of the mouth and the lower part of the nose. The good taste of the photographer must decide

[1] From "Composition in Portraiture."

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these questions, a certain subtle instinct for what is right or wrong, whenever he sees a sitter before him. Nobody else can do it for him. All I can offer (and, for that matter, anybody who writes on the same topic) are a few suggestions.



As soon as you turn the head upward or sideways the nose will become too prominent. Few persons would like to have their portraits taken in a position like Thuman's "Peasant Girl" (Fig. 10). The "Gabriel," by Max, is entirely out of question unless you want a Madonna and not a portrait. When the head reclines toward the shoulder, as in Rosetti's famous depiction of Veronica Veronese (and not away from the body, as is more frequently the case), the result is a highly picturesque one, but I fear it would take a very long-necked lady to be twisted into such a pose, and would suit only a particular type of beauty. What we want in photographic portraiture is commonsense, natural deportment, and as little as possible of artificial posing. Even few actresses would assume such a pose without suggestion.

A pose as Franz Grainor, one of the leading photographers in Munich, Germany, has adopted from some modern portrait painting is much more acceptable (Fig. 4). It is a trifle "Secessionist" for ordinary purposes, but that is rather in the treatment, which is muddy; the pose in itself is absolutely natural, and although rather an unusual one, affords as good a three-quarter view as any. I rather like the way that Grainor used the shadow of the figure for the dark planes of the background, but it does not belong to this chapter.

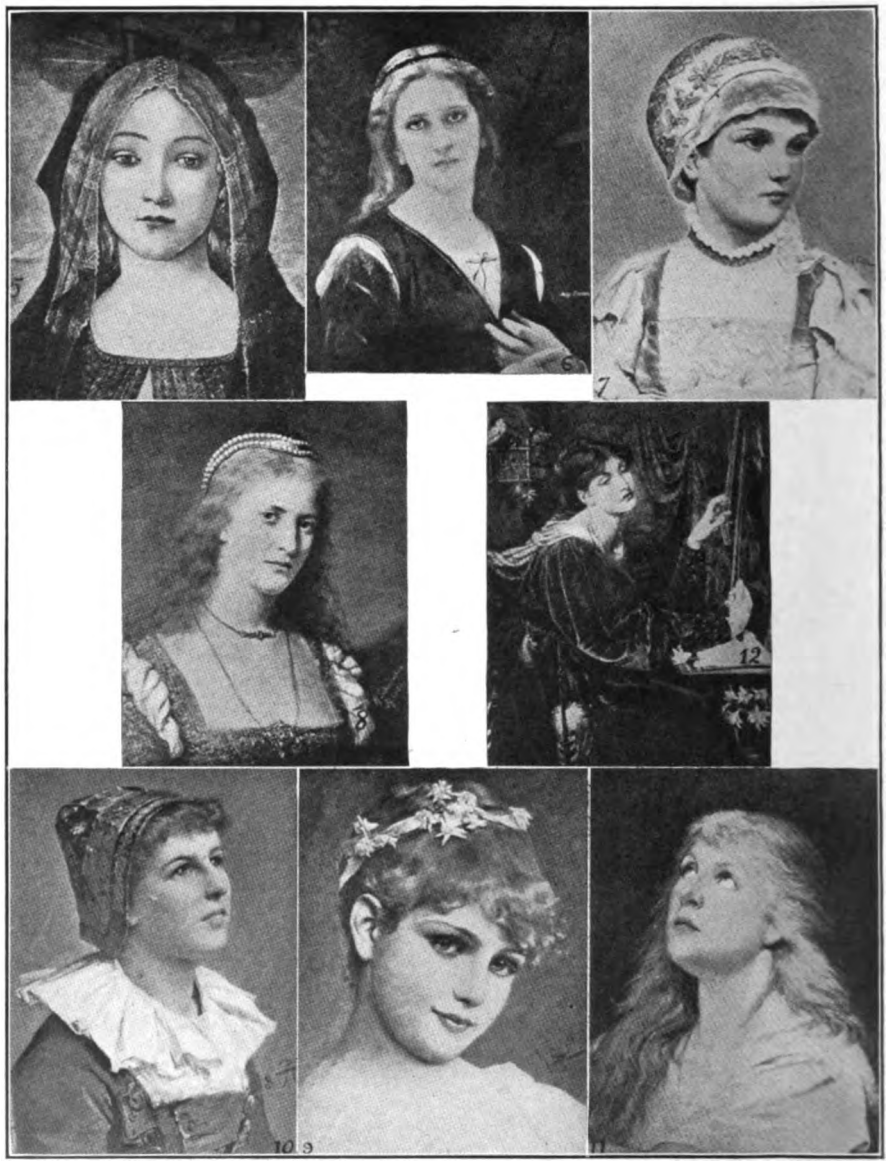
Of particular interest seems to me to be C. J. von Dühren's (another German photographer) portrait of "Two Sisters." The picture teaches a lesson: it shows the difference of effect in the two principal methods of lighting applied to the three-quarter view. In one figure the light strikes the foreshortened side, and in the other the larger side of the face, that is turned toward the spectator.

If you prefer an even light and no decided shadows, the first manner (as seen in Fig. 2 in the figure to the left) will be the best, as it permits the play of middle tints on the shadow side of the face (Figs. 3 and 10). The second manner will be always more contrasty, as the shadows of eyebrow, nose, and chin become more decided. Lighting as in Fig. 7 is almost impossible in photography. The foreshortened side will rarely be as clear and clean-looking on both sides as in this "pretty" picture.

There are three normal positions for the eyes in the three-quarter view. They either gaze straight ahead into space (Fig. 7), or are turned slightly and look straight at you or the camera (Figs. 1, 2, 3, 4, and 9), or are fastened on some particular object (Figs. 10 and 11). The latter is the least to recommend unless the object explains itself in the picture. As soon as a person looks up or downward the pose begins to portray certain emotions, and the depiction of emotions does not belong to portraiture. Only very vague emotions, as, for instance, a cheerful smiling disposition—*i. e.*, traits that really belong to the physiognomy of the sitters as they are constantly displayed—these are permissible in portraiture. The dramatic element, even the sadness of lowered eyes or the astonishment of wide-open eyes, should be carefully avoided (at least in grown-up people).

The mouth as a vehicle of facial expression is almost as important as the eyes. But there is really little to say about it so far as composition is concerned. There is only one rule for both eyes and mouth, that they should be taken as naturally as possible. Of course, a mouth should never be too

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5. "MADONNA"
BY BOTICELLI

6. IDEAL HEAD
BY CABANEL

7. HEAD
BY SEIFERT

8. "BEATRICE CENCI"
BY SCHMIECHEN

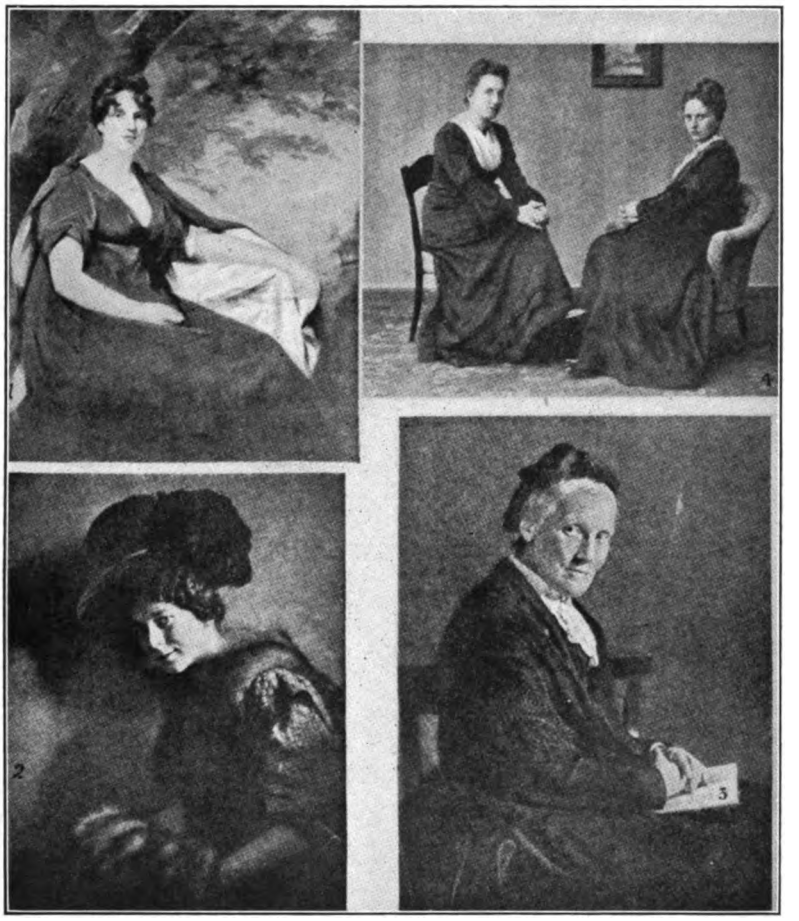
12. "VERONICA VERONESE"
BY ROSSETTI

10. "PEASANT GIRL"
BY THUMAN

9. "EDELWEISS"
BY SEIFERT

11. "MADONNA"
BY MAX

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1. PORTRAIT
BY RAEBURN

2. PORTRAIT
BY FRANZ GRAINOR

4. TWO SISTERS
BY VON DUHREN

3. PORTRAIT
BY KUEHN

tightly closed and not too much foreshortened, unless the foreshortened part is lost in the shadow as in Fig. 2.

A subject for careful study should also be the position of the body in relation to the head. The three-quarter view of the body is preferably the most effective for either profile, full face, or three-quarter view. A perfect profile of face as well as body is usually a trifle hard and severe looking, and a full face with a full view of the body easily becomes heavy and uninteresting.

The face in profile and the body in full view is possible, but looks strained, as does a full-face view with the body in profile. Such attitudes should be attempted only when the sitters assume them, and I doubt if there will ever be many who find any comfort in such wry motions.

In the three-quarter view three combinations are possible. The body can be in profile, as in Figs. 2 and 3, and in the figure to the left, Fig. 4; in three-quarter, as in Figs. 1, 7, and 10; or in full view, as in 8. They all look well and have their advantages. I personally might prefer the three-quarter view, as it offers the best chance for easy and natural attitudes, but this is largely a matter of taste. (And there must be, after all, variety and lots of it!) The best way to learn is to try and assume

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these attitudes and poses with your own body and face before a mirror. I am convinced you will learn more in half an hour than by the study of a dozen books on composition.

There is still another combination, the head looking backward over the shoulder. This is merely a variation of the pose in Fig. 3. The sitter only needs to turn the head a little more. The effect is always picturesque. It is also possible for the face in profile if the body is seen from the back. We will return to this in my chapter on standing positions.

There is still one particular phase of composition I want to speak about, namely, the composition of the neck. If well handled, it is sure to lend grace to every bust portrait. The most natural position is probably Fig. 4 in the diagram. Many of the early Greek statues and the Madonnas of the primitive painters, like Botticelli's head of the Virgin, carry their head that way. But it is not graceful, particularly in modern costume, and should be avoided as much as possible.

It could be easily improved by either giving the neck (Fig. 5) or the head (Fig. 3) a slanting position. A picture like Burne Jones, "The Golden Stairs," will give ample opportunity for such study and comparison. If the Thuman head (Fig. 10) were seen a little bit more full face it would clearly show a straight neck and a slightly turned-over face. Quite common and always pleasing is the effect of Fig. 1 in the diagram. It is well illustrated by the "Beatrice Cenci."

By far the most graceful of all poses is that of Fig. 2 of the diagram. It is really the ideal position of the neck, the classic standard as shown in the Diana's head of the Paris Louvre. A copy of it can be seen at any dealer in plaster casts. The portrait of Henry Raeburn and, in a more pronounced way, the ideal head of Cabanel give a fair idea of it: of the oval of the face slightly turned sideways and set upon the neck in a position that the lines of the neck and face flow together in a curve. I would advise any photographer to pose as many heads as possible in this way. The line of the cheek and neck sloping away into the shoulder should make a blunt angle of about 100 degrees. I can guarantee that all heads carrying out this idea will be more graceful than the others that ignore it. Of course, it must not be exaggerated. The Rossetti picture shows an exaggerated version of the same principle.

A FIVE-MINUTE FIXING BATH

By E. J. WALL, F.R.P.S.

I WAS recently asked as to the possibility of making a fixing bath, which should at the same time be an acid alum bath, that would fix in five minutes.

Of recent years the use of ammonium chloride in the fixing bath has been advanced, notably by Namias and Gaedicke, as increasing the rapidity of fixation, due to the formation of ammonium hyposulphite, which was originally suggested as a fixer by Spiller in the eighties of the last century.

Welborne Piper took up the question and proved that the claims of increased rapidity were not borne out in practice, and that the most rapid fixer contained far less ammonium chloride than was theoretically required to form ammonium hyposulphite.

In a later communication he pointed out that a fixing bath of from 40 to 45 per cent. hypo content was the most efficient at a temperature of about 65° F.

Based on this statement, which I had previously confirmed, the actual content of the bath in hypo was fixed, therefore, at 45 per cent. The next point was the hardener. Ten or twelve years ago,

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Lumière and Seyewetz proved that chrome alum, which by the way contains no alum, was about three times as efficient a hardener, weight for weight, as ordinary potash or ammonia alum. This then was chosen as the hardener. Twenty years ago, Lainer showed that an organic acid in the presence of excess of sodium sulphite gave a good acid bath with but very slow decomposition of the hypo; and he further stated that there was less chance of hypo decomposition, using an organic acid, equivalent for equivalent, than with an inorganic acid such as sulphuric. Acetic acid was, therefore, chosen as the acid.

Personally, I am against the use of an acid or acid-alum fixing bath, but the sole advantage of such a bath is that it does away with any intermediate acid stop bath and that may be an advantage in particular classes of work.

It is unnecessary to enter into the chemical calculations as to the amount of acid which was finally adopted, it being sufficient to state that the quantity used would neutralize about one-third of the total alkali used in a normal developer, and it is an utterly absurd supposition that this quantity of alkali would be carried over into the fixing bath—particularly if the plates be rinsed back and front as soon as taken from the developer, a procedure advisable and permissible with every developer except pyro, with which a greater stain is produced, due to the ready oxidation of the pyro.

The formula finally adopted was as follows:

A		
Glacial acetic acid . .	200 c.c.	140 mins.
Water to	50 c.c.	¾ oz.
B		
Sodium sulphite anhyd.	48 gms.	336 grs.
Warm water to . .	150 c.c.	2 ozs.
C		
Hypo	450 gms.	8 ozs.
Hot water	500 c.c.	9 ozs.
D		
Chrome alum . . .	26 gms.	182 grs.
Hot water to . . .	100 c.c.	1½ ozs.

Add A to B, and then add the mixture to C, stirring well in each case; finally add D.

Probably all the sulphite will not dissolve in solution B, but this is of no moment, as it will readily dissolve on adding A, as the more soluble acid sulphite of soda is formed.

To make C the water must be real hot, otherwise it is impossible to get all the hypo into solution. When it is dissolved, add the mixture of A and B, stirring well, and then add D while bath is warm. Then make the total bulk of the solution up to 1000 c.c. of 16 fluidounces. I have added the approximate English equivalents for the benefit of those who do not use the metric system.

Exactly how long this bath will keep without precipitation of sulphur, I cannot say; but it has been kept twenty days so far without any change being apparent.

If correctly made, the above bath will clear a negative in less then two minutes, and one may assume that the same is properly fixed in five. A positive plate will clear in half a minute.

A question was raised as to how long the above bath could be used without becoming exhausted. This is not the correct term, but it will pass. What actually was required was, how long the bath could be used without its failing to fix a plate in five minutes.

A series of experiments were then carried out, and it was found that no less than three hundred unexposed and undeveloped 5 x 7 plates could be fixed in five minutes in a gallon (128 fluidounces) of the above bath. After this number the bath took longer to fix, but was by no means exhausted—but my patience was.

This means that every gallon of the above bath will fix in five minutes 10,500 square inches of unexposed and undeveloped sensitive surface. And if we assume that half the sensitive salts is reduced to metallic silver in the developer, then the above area is doubled in practical work—that is, 21,000 square inches of plate or film may be fixed in the above bath.

There is a commonly held opinion that chrome alum stains a film. This is all rubbish; the first and the last plate fixed in the above bath were as

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colorless as those fixed in a plain hypo bath and the gelatin certainly was hardened.

For those doing amateur finishing the above note may be useful and it may be useful to add the advice that such a bath after use should certainly go into the residue tub.

THE MERITS OF DEVELOPING PAPER

By SIGISMUND BLUMANN

IT has been the habit of makers of platinum papers,[1] from the time such papers were made, to claim a durability for that ware that no silver paper possessed. At a time when silver papers were only made in the toning varieties, this was true; but notwithstanding the survival of the boast it can no longer be made with absolute truth. A platinum print can last no longer than the paper on which it rests, and a developed silver print will do as much. This is of course a statement that needs modification. The paper must be a reliable brand, the fixing thorough and complete, and the elimination of the hypo absolute. Also, silver papers are more susceptible to the corroding influences of certain chemicals and gases after finishing, but platinum spoils more easily before use, so a balance is in a manner established even in this. I have used Velox six years after the date when the makers' guarantee lapsed. And even in a carefully sealed calcium tube platinum paper of an unimpeachable quality has spoiled within the year of its leaving the factory.

However, it is not my intention to belittle the many superiorities of that beautiful medium which under the gradation screen sows such delicate halftones and gives such delicate tones of black and gray. To the naked eye these same tones and gradations have been imitated beyond discovery on bromide and the slower gaslight papers. Notably, Nepera, now off the market, was so close a simulation of platinum paper that only the waxy emulsion exposed it. It is not my purpose to exalt the Eastman goods at the expense of other makes of paper but I must limit myself to the experiences of my daily practice.

Too little time and study are given to the manipulation of developing papers. The material itself is taken for granted and its simplicity misleads the average consumer, The developing agents, too, are taken on trust—any old M. Q. mixture being used. Workers who compound their plate developers with extreme care and accuracy frequently take any old formula for the paper. This is fair neither to the user himself, who has spent money and time on the material and labor, nor to the manufacturer who employs expensive chemists and skilled workmen to make standardized formulæ. Eliminating the casual amateur, for whom the easiest ways must be devised and only the high spots touched, we find the gallery printer despising the developing process because he cannot get crispness and softness from all sorts of papers with one developer or on any grade of paper with a variety of developers.

Considering the general practice it is marvellous what latitude these silver papers have. The gradation is under control by graduating the amount of hydroquinon or by dilution; the quality of tone by the amount of sulphite and dilution; the blacks may be modified in the first development, as has been my privilege to prove, through all shades of brown to chalk red, and with unfailing evenness and accuracy—it is a matter, merely, of exposure and dilution.

Furthermore, a contrasty paper (hard) with a soft developer will give results

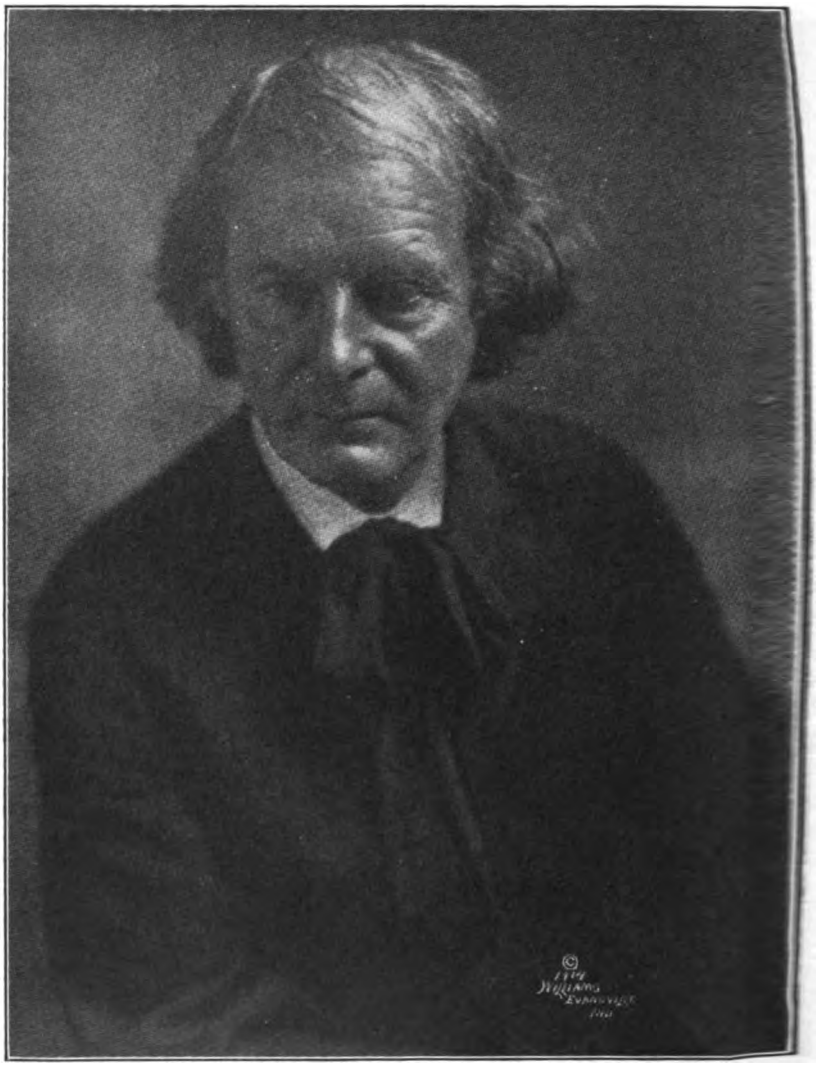
[1] Since the preparation of this article platinum papers have been withdrawn from the American market, on account of war conditions.—Ed. P. J. of A.

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By R. MORRIS WILLIAMS
EVANSVILLE, IND.

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By R. MORRIS WILLIAMS
EVANSVILLE, IND.

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from thin negatives that could never stand up under the light for platinum. A soft paper with a contrasty developer will give results from a plate so dense that platinum should consign it to the scrap-heap. The variety of surfaces and finishes to be obtained in bromide and chloride are offered in no other kind of sensitized paper. The latitude of exposure and development is enormous. The price, as compared to platinum, is ridiculously low; in fact, it is my opinion that if champagne and platinum were as cheap as beer and silver papers, and the latter were extravagantly priced, taste and the dilettant should veer.

Articles have been written (I could write a book) on formulæ and methods of development; but if the advanced worker will keep to the papers put forward for professional use, and therefore dealt with at greater length by the makers, and will study the literature that belongs to the particular brand selected, he may by the application of thought and judgment modify the rules to suit a present purpose—judgment meaning principally an acceptance of the ability of the maker to know best how to use his wares.

When the best galleries accept D. O. P. as legitimate—and many are doing so—the manufacturers will begin to perfect the little mechanical details that are so wofully lacking at this time. Who of us enjoys double pasting with backing paper to avoid curling? A paper with an unsensitized emulsion on the back might enable us to tack a print by the upper corners without the fear of seeing it on some friends' mantel or wall curled into a tube. Also, when the demand is imperative, we shall have developing papers on real India stock—not merely tinted yellow or buff, but that indefinably refined and charming India with its semi-calender and mottled translucence.

Sometimes it has seemed to me that the baryta—or whatnot used to insulate, back, or dope the emulsion—is the really unsympathetic element in this paper, for which, self-constituted, I hold a brief. Royal Nepera, for which I mourn daily, had not that objection, and Royal Velox is claimed to be similar. But with all the respect in the world for the eminent Cummings, to whom I hope these lines will appeal, he can never make another paper like Royal India Nepera, unless he duplicates its every detail.

MASTERS IN PORTRAITURE

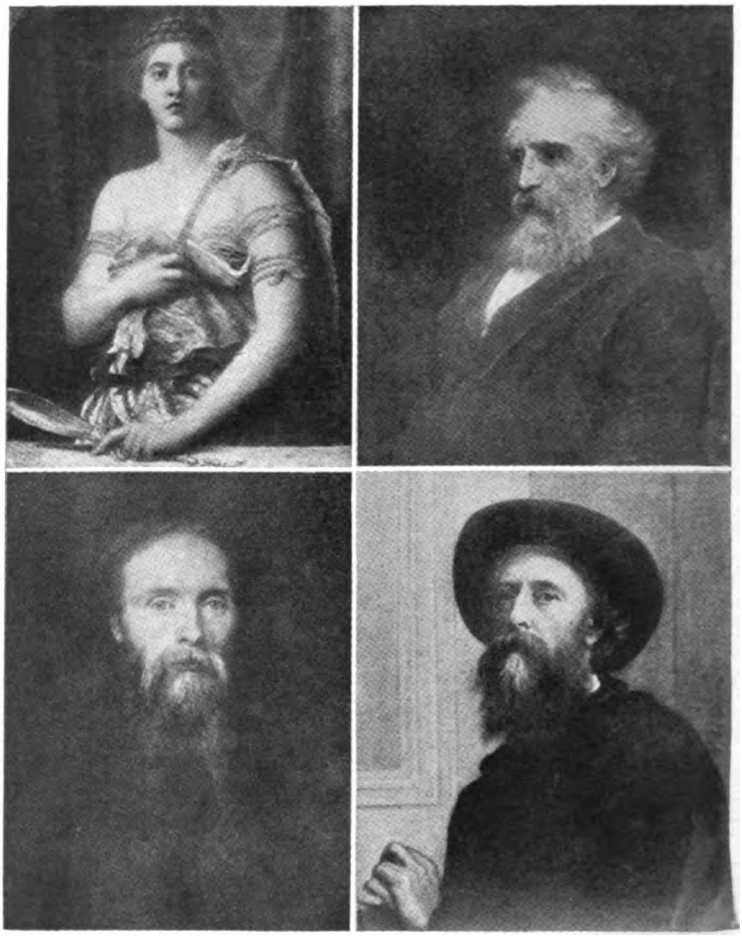
GEORGE FREDERICK WATTS

WATTS is known to Americans preeminently as the painter of "Sir Galahad"—a young knight in armor in a pensive attitude, with a white horse at his side—and the allegorical figure compositions of "Love and Death" and "Life and Love." He is equally remarkable in portraiture.

In his ideal figure representations he is an innovator. He has no sympathy with the traditional ideal of allegory, with semi-nude females with a sphere or compass in their hands. Although we have learned to associate a certain meaning with these attributes, nothing is really more foreign to us than these platitudes of Greek symbolism. Watts endeavored to introduce a new style of allegory. He invented his own images for every thought he wished to convey: a rather bold undertaking. He failed many a time. His idea is not always clear to us. It seems far-fetched at times, too elaborate and individual for spontaneous apprehension. But he always fought, as every true artist does, for self-expression. Everybody forms for himself an illusion of beauty through which he views the world, and he is most fortunate, as Guy de Maupassant claimed, who approaches most closely to the truth of things as he sees them through his own peculiar illusion.

Watts in all his ambitious figure

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1. WOMAN WITH MIRROR
2. BURNE-JONES
3. PASSMORE EDWARDS
4. SELF-PORTRAIT, 1864

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paintings was a poet and visionary, and often strove to accomplish the impossible. In his portraits he became astonishingly normal. He discarded all extraordinary and dramatic elements. He simply painted *his* conception of each sitter. They were exceptional personages, to be sure, as he would portray no others, but they were done in such a direct and appreciative manner, with such an absolute perfection of technic, suppressing all unnecessary elements, that his best efforts in this direction, as, for instance, his "Burne Jones" and "Cardinal Manning," have to be ranked with the foremost portraits of modern times.

Lenbach considered accessories a necessary evil which he tried to overcome by careless treatment. Watts was inclined to leave it out altogether, and in the majority of his portraits, as Figs. 2, 3, 8, 11, and 12, he succeeded in doing so. And they invariably represent his best work in portraiture.

The "Woman with Mirror," Fig. 1, is a fancy study. It has dignity of pose and a certain breadth of treatment. It is an ideal conception, a woman of some imaginary world. Proud and distinguished, lofty and unapproachable, she glances at the beholder. For ordinary pictorial purposes the composition is entirely too severe. The lines of the arms and the drawing of the hands are particularly beautiful.

The tendency to develop the character briefly and without accessories is shown to the best advantage in the "Burne Jones," Fig. 2. There is nothing but the face, a luminous surface with precisely drawn features and wonderfully expressive eyes. Even the outline of the head and beard are lost in the background, and there is hardly any suggestion of the body (except by color). This only becomes possible by concentrating all light upon the face and showing no decided shadow side. The most fascinating part of this portrait is in the eyes. In photography this soulful quality, which seems to reveal the entire personality of the man, is beyond the skill of the operator. The sitter alone could furnish it. The head is exceedingly well placed, just a trifle to the left above the centre. The slightest shift upward or downward, or to the right or left, would have injured the harmonious effect.

The Edwards, Sabine, and Crane portraits are composed on similar lines. No accessories whatever. They show, however, the bust in a more or less distinctive manner. Figs. 3 and 8 seem to be equally successful. The lines of the body are merely indicated, and even the elaborate decorations on Sir Sabine's breast are so skilfully subordinated that there is nothing but the face to look at. In the Crane portrait the treatment is more conventional.

All three have the charm of ocular expression. Watts always made the most of the eyes in his portraits. They reveal the true character of a personality better than any other feature, with the exception, perhaps, of the lines of the mouth. The chin, nose, and forehead emphasize the construction; the cheek the surface qualities of the flesh; but it is left to the eyes and the mouth to bring out the inner life. Study the eyes in these three portraits and judge for yourself.

Also the treatment of the planes of the background deserves special attention. In Fig. 3 the background is darker than the bust. This in a monochrome suggests a light-colored suit. One feels that this man, a philanthropist, does not care to be dressed in sombre black. The rugged outline of the shoulder and arm lends strength to the body. In Fig. 8 we have a semidark background against a dark body. There is a vague shimmer of light in the background to contrast the subdued highlights of the decorations. Fig. 11 is too monotonous in tone. The position of the head would be improved by moving it just a trifle toward the right.

Fig. 5, one of Watts' youthful efforts, is noteworthy for its charm of lines and the careful balancing of light and dark masses. It is an effective example of circular composition.

Of the two self-portraits, I vastly prefer Fig. 9. There is a lapse of sixteen years between the two works, and they show how steadily Watts

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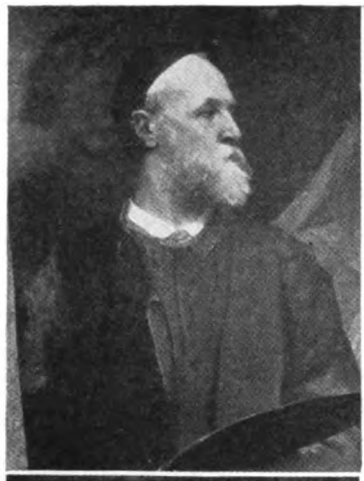




5. GROUP OF CHILDREN
6. LILIAN

7. MRS. G. F. WATTS
8. GEN. SIR EDWARD SABINE

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9. SELF-PORTRAIT. 1860
10. FREDERICK LEIGHTON
11. WALTER CRANE
12. CARDINAL MANNING

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improved toward the end of his life. Fig. 4 is no doubt a fine character delineation, but the pose is somewhat affected, the outline too precise, and the contrast between the blacks of the figure and the gray background too decided. Nor do the vertical lines in the background particularly help the composition. The head is well placed and the hands are beautiful, although the latter, resting on a portfolio, were merely introduced to suggest the vocation of the sitter. In Fig. 9, in which Watts bears a striking resemblance to Titian, we have a rather restless background, that does not harmonize with the severe simplicity of the figure. Watts used one of his own paintings as a background, and although this may convey to many of his admirers a note of particular interest, it is bad for the composition. The full-face view of the body supporting the profile is excellent in every way. The luminous face with the penetrating gaze is exquisitely balanced by the dark shapes of the pallet, the skull cap, and the dark passage of the painter's working coat. He was very wise in leaving out the hands.

Fig. 7 almost looks like a joke. Strange that Watts never painted a sympathetic likeness of his wife! This is the only attempt in existence. It is said that Mrs. Watts, a sculptress and authoress of note, had a most attractive face, but that she objected so strenuously to being portrayed in any shape or manner that her husband gave up the task in despair. If he had destroyed this sketch, surely the world would not have felt its loss. There is nothing to recommend it.

The portrait of "Lilian," Fig. 6, Watts' adopted daughter, has the merit of a simple, unaffected pose. It is rather difficult to depict a young girl holding a basket of flowers in such a natural manner. There is a great danger of trying for some especially graceful pose, which would result in mere prettiness. The face is rather subdued; it is the whole figure which attracts attention in this picture. And this was no doubt the aim of the painter, to reveal the character by the graceful girlish form rather than by the face. The repetition of the shape of the figure by a dark silhouette of foliage in the background lends animation to the simple pose. Without it the lines of figure would be too severe.

The portrait of Frederick Leighton, Fig. 10, is to me the least satisfactory one of those I have discussed today. The face lacks the usual concentration of light, the hands are meaningless, and there are entirely too many disturbing lines and planes and spots in the robe of the President of the Royal Academy to produce the harmonious effect that one expects to see in a masterpiece. The palette with the brushes help to balance the angular folds of the sleeves. The more detail there is in a bust, the more varied the background has to be. Those who strive for simple effects must start with a simple treatment of the face. This will necessitate an equally simple treatment of accessories, which in turn will demand the elimination of all details in the background.

The portrait of "Cardinal Manning," Fig. 12, is generally considered as being one of Watts' masterpieces. It is not faultless; there is little characterization in the hands; they look too much like claws and are too dark in tone. The painter was forced to lower their value; displayed against the light lacework they would have attracted too much attention if the painter had rendered them in a higher key. As it is, they help to make the cardinal's official vestment less obtrusive, but lose themselves in beauty of line and expression.

Also in this portrait the head alone is of importance. The attitude of the body is an humble, almost conventional one. The pale, thoughtful countenance against a dark background reveals dignity and power, determination, and a subtle intellect. It is not as keen and analytical a characterization as that of Lenbach's "Pope Leo XIII," but in many ways, notably for its repose, simplicity of treatment, and directness of expression, is as remarkable a picture as that of the great German portrait painter. There is nothing to criticise except the hands.

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Watts, as we have learned to appreciate, is superior to all portrait painters in the one quality of doing full justice to the human face. His thoughtful composition never strives for mere effect. All unnecessary detail is avoided. Breadth and dignity of pose, that permit none but serious sustained gestures; a keen appreciation of the constructional beauties of the human face, in particular of the eyes and mouth, and an almost clairvoyant conception of the soul life of illustrious personalities, are the principal characteristics of Watts' portraits. And as they are synonymous in the good portraiture, the works of few modern masters will prove as beneficial to the student as the art of George Frederick Watts.

THE SELECTION OF STANDPOINT

IT may be safely asserted that far too few photographers pay sufficient attention to the question of standpoint in their pictorial work, and the result is that many pictures fail because some detail quite unimportant in itself is overlooked and in the finished picture becomes a jarring note in an otherwise beautiful composition. The fault rather seems to be that many workers do not appear to have any individuality of their own, and frequently adopt a careless and haphazard method of work, even in their rendering of the beautiful. They see a beautiful picture, but when they see it do not strive to find the most suitable position from which the composition is at its best to make the exposure, but erect the camera and make the exposure without first trying to see if there is a still better position to be obtained, or whether there is some detail that will add an inartistic element to the composition within the compass of the picture. It is certainly wiser to endeavor to see superfluous details, and so avoid them, than to realize too late what the picture might have been in the finished print.

Here is a case in point. The west front of a well-known cathedral in the late afternoon sunshine makes an imposing and effective picture when viewed from a certain angle. Standing directly in front we have for our composition the plain building only, but by moving farther back, and a little to the left, we bring branches of trees in on either side of the picture, part of which obscure a portion of the front of the cathedral, and so give us a more interesting picture than would be the case without them. The picture-postcard photographer and the record worker would stand directly in front of the building, and endeavor to exclude all that did not appertain exactly to the subject; but the pictorialist must remember that beauty is the aim and object of his picture making, and quite the next thing in importance to the composition itself is the point from which it is to be viewed in order to get the very best pictorial effect. The inference that should be drawn from the instance here given is that while one position will give us a record of the front of the cathedral as it stands, the second will give us a beautiful impression of the same, which is pictorial photography in its widest and most acceptable form.

The landscape worker will find in the course of his picture making that other trees or trunks in woodland scenes frequently make awkward lines in his composition, but by altering his standpoint slightly the worker can obscure these defects by placing them in his picture behind some prominent object in the foreground, and so hiding them altogether. In this way the trunk of one tree that stands out in the distance about halfway up the principal tree in the picture can, when "composing," be hidden immediately behind it, the camera need only be moved a foot or so, and any awkward element in the composition, such as an effect like this would cause, may be avoided. A similar maneuver may also be necessary at times for the

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purpose of disguising the advertisement boardings that so frequently disfigure stretches of landscape in this country. By taking advantage of a prominent foreground object, and rendering it so that it looms large in the composition, the offending boarding can frequently be blotted out. We recall a case in which a portable piece of foreground, in the shape of a branch of a tree, and a bunch of transplanted cow parsley and thistles, not only materially helped to improve the picture from the viewpoint selected, but effectively blotted out a large wooden cow, with milkmaid complete, which advertised a well-known product, in the middle distance.

And again, the choice of standpoint has a great deal to do with the lines of the picture, whether they run in harmony, making a perfect whole, or whether they run in discord, and divide the picture into two or three insignificant parts. One thing the worker may be certain of, and that is that there is one viewpoint, if the subject is good, from which the lines will be seen to compose satisfactorily, and it is the artist who must endeavor to see that point and expose therefrom.

This brings us to a subject that, if it has not any active connection with the question of pictorial standpoint, is very closely associated with it, namely, whether the picture should be horizontal or vertical. A safe rule is to take the actual lines of the picture itself: if they are narrow and carry the eye upward, then the picture should be vertical; but if broad and sweeping, then the horizontal position will suit the composition best. It has been said that the vertical picture conveys the impression of strength, while the horizontal that of rest and quiet peace; but it is the actual lines of the composition that are the best guide. No thinking worker would photograph an aisle of a cathedral in the horizontal position, any more than he would attempt broad, open landscapes with his plate in the vertical position, although occasionally such an arrangement is permissible for the purpose of giving emphasis to a lofty cloud effect.

And in conclusion: The question of standpoint is one on which much of the success of the picture rests; a bad point of view will ruin the best of pictures, even as a good standpoint may make the best possible of indifferent material. The knowledge of which is the best position for pictorial effect in the hands of the worker who knows is of more value than an extensive skill in "controlling" the after result. And so in the attainment of perfection, pictorial workers must not neglect what seems of small importance in itself, for a knowledge of the way that brings perfection will show that in its attainment it will depend upon small details, faithfully observed and carried out. Practical workers have always shown the importance of choice of standpoint, and its great influence in pictorial work.—*The Amateur Photographer.*

SUGGESTIONS

THIS formula, by Meydenhauer, for rodinal developer is said to give excellent results for bromide enlargements.

Rodinal	1½ drams.
Sat. sol. carb. potass. . .	1½ drams.
Water	32 ounces.

The color of the print images is a rich warm black.

POTASSIUM percarbonate is the best chemical destroyer of hypo. Rinse the plate from the fixing bath, cover with clean water, and add 3 to 5 grains potassium percarbonate for every quarter plate; rock, remove plate when liquid ceases to effervesce, and wash for five minutes.

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The New England Convention

The Eighteenth Annual Convention of the Photographers' Association of New England was held at Copley Hall, Boston, September 12, 13 and 14.

The address of welcome was delivered in the lecture-hall by J. Frederick Hopkins, director of the Normal Art School of Massachusetts. John I. Hoffman, secretary of the National Association, spoke briefly on the benefits of membership in the P. A. of A. This was followed by impromptu discussions on practical topics by members.

Demonstrations at the Champlain Studio occupied the mornings, and in the afternoons it seemed to require considerable persuasion to get the photographers away from the displays into the hall for business meetings.

The picture exhibit was not remarkable in size nor scope, many States being represented by only one photographer, but even in those cases prizes were awarded. The consensus of opinion seemed to be that in the Grand Portrait Class, especially, the quality of the work was hardly worthy of the name. The prizes were awarded as follows:

The Peterson Studio, of Hartford, was awarded the three highest prizes, receiving the gold medal in the Grand Portrait Class, which was open to the world; the Champlain trophy cup, and the first State prize for Connecticut.

J. C. Bushong, of Worcester, received the first State prize for Massachusetts, and the Whitman Studio, of Malden, second. Other State prize winners follow: Connecticut, George E. Tingley second; New Hampshire, Claude L. Powers first and the Andrews Studio second; Maine, the Matthews Studio first and the Hanson Studio second; Vermont, Katherine Bingham first and A. A. Bishop second; Rhode Island, A. A. Vandall, only entry.

W. A. Sands won the Wollensak Optical Company's trophy, and the landscape prize went to George E. Tingley, of Mystic, Ct. E. Nicolai, of Palmer, Mass., received the commercial prize, this being the only entry in this class.

An excellent address on "Promotion of Trade-Department for the Studio" was delivered by Mr. J. A. Dawes, of the Wollensak Optical Company. Other talks were given by A. E. Whitney, of Norwood, Mass., on "Profitable Lantern-slide Devices," and by Mr. Frederick E. Ives, on "The New Hess-Ives Process, Hicrography," a successful method of producing color-photographs on paper.

The new executive board is as follows:

President, M. D. Hanson, Portland, Me.; 1st Vice-President, Louis F. Bachrach, Boston, Mass.; 2d Vice-President, A. K. Peterson, Hartford, Conn.; Secretary, A. E. Whitney, Norwood, Mass.; Trrasurer, Eugene A. Holton, Boston, Mass.; State Vice-Presidents—Maine, Harry Plummer, Lewiston; New Hampshire, L. G. Ross, Newport; Vermont, Katherine Bingham, St. Johnsbury; Massachusetts, Ralph H. Schein, Chelsea; Rhode Island, John Sabine, Providence; Connecticut, R. D. Haley, Bridgeport; Maritime Provinces, Edson Graham, Wolfville, N. S.

Providence was chosen for the next convention, in 1917. The Chamber of Commerce extended the invitation—a free hall, free transportation, both ways, of the Association's paraphernalia. The dates of the meeting will be published as soon as determined by the new board.

The Photographic Art Exhibition

The American Institute of Graphic Arts has once more justified its existence by showing at the National Arts Club, New York, one of the most interesting and instructive collection of pictures made through the aid of photography and gathered in an exhibition.

The evolution of the photographic process since 1839, when Daguerre gave the daguerreotype to the world, up to the wonderful work now done in color photography, is illustrated by exhibits of all the changes that have come in recording pictures by the action of light.

Edward A. Kendrick presided at the opening of the exhibition and introduced Pirie MacDonald, "Photographer of Men," who said that "in the early days of portrait photography the problem was how to keep the subject still, and the result was the impression of the outside of a frozen man or woman. Today the danger is the subject may keep too darned still." Dr. Arnold Genthe told of the progress in color photography and W. L. Palmer of the great industry the "movies" have become.

Prof. Charles F. Chandler then delivered a

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lecture briefly describing the principal discoveries by experimenters on the action of light on various substances. He illustrated his most instructive talk with examples of the different processes he mentioned.

From the Chandler Museum at Columbia University were brought precious treasures, from a complete apparatus for making daguerreotypes to some of the most beautiful prints made by photogravure in color.

From England, Canada, and from Seattle to Maine, photographers have contributed to this exhibition examples of their art, and the examples themselves prove that the word "art" is not here misused.

Among the curios are photographs of President Lincoln at various periods of his career and old silver prints and daguerreotypes of other prominent men and women of the past.

An educational exhibit by the Eastmen Kodak Company, with portraits of the men who pioneered photography, and beautiful examples of the very latest developments in the recording of color by photography, is also well worth seeing.

The list of exhibitors included Karl Struss, Dr. D. J. Ruzicka, Clarence H. White, Dr. Arnold Genthe, Prof. F. E. Ives, Edward R. Dickson, Elias Goldensky, Alvin Langdon Coburn, Arthur D. Chapman, Francesca Bostwick, Pirie MacDonald, H. H. Moore, Blanche Hungerford, F. A. Ringler, Frederick H. Meserne, the Century Company, and about sixty others.

The exhibition will remain open at the National Arts Club until November 10. Entrance at 119 East Nineteenth Street.

Death of Henry Reimers

We regret to have to announce the death of Mr. Henry Reimers, on October 2, after an illness of but a few days. Mr. Reimers was the head of Reimers' Photo. Stock House, of Milwaukee, for many years.

Fifth International Photographic Salon, California Camera Club, San Francisco

The California Camera Club will hold its fifth annual photographic salon, the first since the great fire of 1906, in the galleries of the Palace Hotel, San Francisco, November 25 to December 2, inclusive, 1916.

It is the aim of the salon to exhibit only such pictures as measure up to the highest standards of artistic expression and show mastery in execution. All work submitted to the jury of selection, composed of leading artists, will be judged according to these standards.

All correspondence should be directed to the secretary, California Camera Club, 833 Market Street, San Francisco, California.

Phil M. Riley Makes a Change

Mr. Phil M. Riley, co-author of *The Wood-Carver of Salem*, for many years associate Editor of *Photo-Era*, and well known to the reading public for this magazine articles devoted to photography, architecture, mechanics, and the motor-car in many leading periodicals, has joined the editorial staff of *The India Rubber World* as chief writer.

Stolen from the New York Camera Exchange

Between the hours 6 P.M., Saturday, September 16, and Monday morning, 7 A.M., September 18, the New York Camera Exchange was robbed of a lot of valuable kodaks and other high-grade cameras. The list being too extensive to publish here, a copy will be mailed on request and a liberal reward is offered for the detection or return of the goods.

The Hiblock System

The "Hiblock" consists of two plates and a film, all three bound together to handle like an ordinary plate. The emulsion side of the front plate faces to the rear. In contact with this is an ordinary non-curling (N. C.) film, again facing rearward and in face-to-face contact with the emulsion of the back plate. The front plate is sensitive to blue, the intermediate film to green, and the rear plate to red. This block of three is placed into a holder, differing from the ordinary one in depth, to give room for the double thickness of glass, and in the provision of suitable flat springs to ensure intimate face contact between the plates and film.

It is clear that the Hiblock knows no limitation in size that does not hold for ordinary plates as well. The more popular professional 8 x 10, the smaller 5 x 7, and the larger 11 x 14 sizes are furnished regularly as standard; larger or special sizes are made to order.

As the Hiblock plate-holders are made interchangeable with all standard single or double plate-holders, they can be used with any studio or portable camera. A photographer may employ any lens of his preference. No color screen or compensator is used for daylight exposure; the color compensation and selection are embodied in the Hiblock itself; for flash and other artificial lighting that has color values differing from daylight, special compensators are employed. The entire manipulation of the Hiblock differs in nowise from that of the ordinary single plate; over this it has the important advantage that no emulsion faces are exposed, thus assuring safety against fingermarks, scratching, and other inadvertencies.

No investment for special apparatus need be made to fit up for Hiblock color photography; the special plate-holders are furnished free of charge with the first purchases of Hiblocks.

The same skill in posing and lighting for black-and-white that distinguishes the work of the artist photographer from that of the rank and file will result in equally artistic portraits. The slight difference in lighting technic that will secure luminous shadows full of color with crisp high-lights, or softly subdued pictures quite as vibrant with delicate color, is mastered in a few trials.

Given the same command of posing and lighting that is necessary for black-and-white, the remaining technic of Hiblock plate develop-

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ment and Hicrome printing-out is easily within the ability of the average studio helper, and is acquired with a very little earnest application.

The exposure is necessarily longer than for monochrome plates. In general, 40 to 80 times as much as would be given for a rapid ordinary plate; when a quarter second would suffice with the ordinary plate, the Hiblock should be exposed 10 to 20 seconds. The one exposure acts simultaneously upon the two plates and the film of the Hiblock.

Before development the short paper binding-strips at two opposing edges that hold the three elements of the Hiblock together are cut; development is then proceeded with as usual. The time and temperature method is preferable; a reliably working developer of our own compounding will be found very satisfactory. Fixing in hypo, washing and drying are much as usual.

The negatives are printed out on bichromated film that we furnish. Either daylight or artificial light is used. A Hicrometer is useful to time the printing.

The printed-out film is developed in hot water at about 100° F. until the highlights show clear; this is followed by a short wash in cold water or under a gently flowing stream to stop further development. After drying in a cool place, or in the draft of a fan, the film is cleared by a few moments' immersion in hypo and ferricyanide. That film which was printed-out under the front or blue sensation negative is placed in a yellow dyebath; that printed out under the film negative is placed in a magenta dyebath, and the third in a blue dyebath. No skill is involved for dyeing, as the films are simply left to soak to saturation; ten minutes brings up each picture to its full color strength; prolonged immersion, even for hours, is without further influence.

The dyebaths are very simply made up, as the dyes are furnished in capsules whose contents are dissolved in a stated quantity of water.

The dyed prints are rinsed in a weak (10 per cent. No. 8) acetic acid solution. The magenta and yellow films are then allowed to dry. The blue film is, while still wet, squeegeed on to a piece of special white paper held on a ferrotype plate and stripped from the paper after about ten minutes. The blue dye will have travelled into the face of the paper.

When dry, the blueprint is stripped from the ferrotype sheet, the magenta and yellow films are assembled with it in register, and the three held together at one edge by lantern-slide binding. Registry is facilitated by register marks found on the front Hiblock plate, shown also on the film and back plate. These marks in turn print out on the bichromated films. Placing a little amyl acetate between the prints and then squeegeeing them thoroughly into contact, cements the three into a single "print on paper," or Hicrome, ready for mounting on a stiffening cardboard back.

As a monochrome demands retouching to remove imperfections of the original or to compensate for over- or under-exposure, so similarly retouching may be necessary in color photography.

The negatives are retouched quite as in black-and-white. Color corrections and desired alterations, as of the complexion, are made on the surface of the yellow top film of the assembled print. The simple application of a drop of water laid on with a brush removes color, while the use of dye instead adds or changes color, as may be desired. Shading is not done with the brush; it is automatic in accordance with the gradation of the negative that resulted from the printing out and washing; it is photographic, due to the action of light and shade during original exposure; it is only the selective modification of the color tone that is left to choice or judgment; beyond the exercise of that choice no skill is involved. The Hess–Ives Corp., No. 1201 Race Street, Philadelphia, will be pleased to forward you their booklet on "Hicrography."

The Clarence H. White School of Photography

The third winter session will open October 30, 1916. The program of studies, the lectures, and the practice in the dark-room and in the field and studio cover a period of twenty-eight weeks, and are designed to give the student a thorough training in the science and the art of photography.

Post graduate and special courses are being arranged for students who have completed the one-year course, and for those who wish to take only certain portions of the work.

Correspondence is solicited from those wishing information relative to the school. Catalogue on request to Clarence H. White, 230 East Eleventh Street, New York City.

Processess at the Royal Photographic Societies' Exhibition

It is interesting to total the number of prints by each of the various processes used by exhibitors in the pictorial section of the Royal Photographic Society's exhibition recently held in London. Exhibition processes are not necessarily popular processes but this record is at least an indication. In all a hundred and forty-six exhibits are described, and these are divided as follows:

Bromide	89
Platinum	26
Bromoil	16
Oil	6
Carbon	6
Photogravure	3

Prof. E. J. Wall Leaves Syracuse

Professor E. J. Wall has severedhis connection with the School of Photography of Syracuse University and intends to devote his energies entirely to literary work and photographic research. We hope to shortly resume publication of his "Abstracts and Translations," which has been temporarily suspended, mainly because no foreign journals are now reaching this country.

Agency for Cooke Lenses Discontinued Here

As it is impossible under the present war conditions to export Cooke anastigmat lenses

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from the English factory to the United States, on and after September 20, the American Branch, The Taylor-Hobson Co., will be discontinued until further notice. As soon as conditions make it possible it is expected that the agency will be resumed and notice of such resumption with details as to address, etc., will be sent in due course.

Market for Pictures

Photographers, both professional and amateur, can find a good market for a certain class of pictures by addressing the Portland Cement Association, 111 West Washington Street, Chicago, and requesting details of a photographic competition which the Association is now conducting. A number of cash prizes for best pictures received will be offered, in addition to which all prints received that are suitable for advertising or booklet illustrating will be purchased at a fair price. Write the Portland Cement Association for particulars.

The Growth of the Haloid Company

Few manufacturers of photographic supplies have shown a more rapid growth than the Haloid Company of Rochester, N. Y., makers of Haloid Developing Papers. This concern reports an increase of over 100 per cent. in its 1916 business. So rapidly has the demand for its goods overtaken and passed its capacity to produce, that for some weeks deliveries have been somewhat tardy. Installation of much needed coating equipment is being rushed as much as possible and it is expected that the usual prompt shipments will soon be resumed and maintained.

Important New Price List

We have been informed by the C. P. Goerz American Optical Co., 317 East 34th Street, New York City, that adverse conditions caused by the European war have compelled them to cancel and withdraw all former prices. The company reports that while the war has somewhat interfered with the delivery of their cameras, yet as regards lenses they have been more fortunate. Prior to the war they had imported a large quantity of genuine Jena glass which their completely equipped optical factory in New York City has been turning into Goerz lenses without interruption. At present the company is in a position to supply nearly all its lenses with but few exceptions. A new catalog, containing a list of such goods and accessories as they are able to furnish in reasonable quantities, is now on the press. It will also contain the new list prices which are about 10 per cent. in advance over the prices in force prior to October 1, 1916, and will be ready for general distribution within a short time.

Our Cover Picture

The beautiful cover picture this month is by R. Morris Williams, Evansville, Md., and is a fine example of the high-class work done by this master photographer. It will be of interest to our readers to learn that this print and that of the late Elbert Hubbard were awarded the first prize in the Grand Portrait Class at Milwaukee, August 4, 1916. This competition was open to all comers and the pictures were given a rating of 92 per cent. by Prof. E. J. Lake, of the University of Illinois. They were printed on Professional Cyko, giving a wonderful, soft effect.

Photographic Negatives upon an Opaque Support

From time to time various efforts have been made to manufacture photographic plates with a support of paper of very uniform texture, with the object of reducing the cost and other objections of the usual glass or celluloid carrier. The insufficient regularity of texture and transparency of paper have so far, however, defeated the efforts of manufacturers to introduce paper for this purpose. A method of overcoming this objection, proposed by F. Larajolli, consists in making the print, not by transmitted light, but by reflected light. The emulsion is supported upon a fairly heavy white paper, the back of which is coated with an opaque color. Halation is thus entirely avoided, while the white surface constitutes an efficient reflector. These "plates" are mounted and exposed in the camera in the same manner as the "film-pack." Development is controlled in the same manner as that employed with other papers in which the image is produced by the action of a developer. A special apparatus somewhat like the common type of enlarging camera is employed for printing, arranged with a source of illumination like that employed in lanterns for projecting opaque objects. The cost of such paper plates is said to be one-half that of glass plates and from one-third to one-quarter of celluloid films.—*Revue Scientifique.*

Kodaks in the Army

One of the favorite forms of pleasure indulged in by thousands of army officers and enlisted men doing duty upon the Mexico border is the taking of snap-shots of interesting scenes and features of camp life and of the locality in which they are doing duty or along the lines of march. A striking evidence of this fact was shown recently when a division of fifteen thousand soldiers hiked from San Antonio to Austin, a distance of eighty-five miles. As the column, twelve miles long, wended its way over the dusty road there were to be seen, strapped to the shoulders of scores of men, kodaks, which were brought into use at every opportunity. Even the cavalrymen and artillerymen were not without their kodaks. Whenever a stop to rest for a few minutes occurred interesting objects near at hand were snap-shotted, and if the light was good enough when camping places were reached, or before departure in the morning, the kodaks were freely used.

The sales of kodaks and kodak supplies to the army men upon the border have been enormous during the last few months. In every camp kodak supplies are sold.

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THE WORKROOM

By the Head Operator



THE RECOVERY OF SILVER RESIDUES
HANDS
A WAR-TIME SAVING
TIME DEVELOPMENT WITH AMIDOL
CLEANING CAMERAS
THE EXPOSURE IN CINEMATOGRAPHY
WHEN IN DOUBT—A SERIES OF PRACTICAL HINTS
ENLARGED PAPER NEGATIVES
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REPORT BY ANSCO RESEARCH LABORATORY ON LIVER OF SULPHUR TONING
SOME LITTLE-KNOWN PRINTING DODGES
BASIC CHROME ALUM
SPOTS ON PRINTS
TONING BROMIDE PRINTS WITH GOLD
ACETONE FOR CARBON WORK
FLATTENING PRINTS
STAIN REMOVERS
MEASURING THE FOCUS OF A LENS
REMOVING PINHOLES
EXPOSURES WITH MOVING OBJECTS
QUICK DRYING OF PRINTS
AIR-BELLS
MOUNTING WITH A COPYING PRESS
PRINTING UPON SILK WITH THE SALTS OF SILVER AND IRON
TESTING A LENS
REDUCTION BY REDEVELOPMENT
GUM TRAGACANTH
A DARK-ROOM REMINDER

THE RECOVERY OF SILVER RESIDUES

THE recovery of silver from old fixing baths is a simple matter, and those who are in doubt whether it is worth their while may be enabled to arrive at a decision from a consideration of the following data and instructions for carrying out the process.

Procure a large bottle, holding, say, 64 ounces, or larger if you can get it. The larger the bottle the less often will the process require attention. Put into this bottle an ounce or two of granulated zinc, or, preferably, some rods of zinc long enough to reach up to the shoulder of the bottle. This is all that is required. The used fixing bath is thrown into the bottle instead of down the sink, and deposition of the sliver in metallic form immediately commences and is complete in a few days. The silver is chiefly deposited as a loose, black powder, forming a sludge at the bottom of the bottle, but sometimes a portion attaches itself to the sides of the bottle, forming a lustrous coating. It is advisable to shake the bottle occasionally. When the bottle is full, a few days should be allowed to elapse, and then the clear liquid may be decanted or siphoned off, care being taken not to allow any of the sludge to run away. The bottle is then ready to receive further quantities of used hypo, and the above process is repeated until the silver sludge has sufficiently accumulated to be further dealt with. It is then washed by filling the bottle with water three or four times, allowing the deposit to completely settle between each filling and decanting the clear water. It must now be filtered off and dried. For this purpose a large funnel and filtering material must be provided. For quantities of sludge exceeding an ounce or so, a clean linen filter should be used; for a less quantity filter paper may be used, but it would be scarcely worth dealing with except as an interesting experiment. Wet the piece of linen and fit neatly into the funnel. Shake up the washed sludge with some fresh water and pour onto the filter. Rinse the bottle with more water and pour onto the filter.

It will probably be found that a quantity of heavy particles of silver are difficult to rinse out of the bottle. These may be removed in the following manner: Nearly fill the bottle with water, close the neck with the palm of the hand and invert. Hold the bottle thus for a few moments, giving it a gentle swirling motion, until the particles of silver are seen to settle down into the neck. Now hold the bottle over a claen basin or beaker and allow the water to run out slowly into the basin. The whole of the silver particles will be swept out into the basin by the first few ounces of water thus allowed to escape, and may then be easily washed onto the filter. The pieces of zinc will be retained in the bottle ready for future operations. Fresh additions of zinc will be required from time to time, as an equivalent quantity goes into solution in place of the silver deposited.

When no more drainings come away from the sludge the filter with its contents is removed from the funnel, placed on a plate or shallow dish and put in the kitchen oven till dry, or it will dry spontaneously in a week or so if put in any safe place where the air is dry. In this condition it may be sold to the refiners, or, if the photographer prefers to convert it into nitrate for his own use, it must first be fused in a clay crucible with its own weight of bicarbonate of soda, or preferably a mixture of equal parts of sodium and potassium bicarbonates. It is, however, useless to attempt this metallurgical operation in an ordinary fire. To effect the fusion of silver a bright red heat (1000°C.) is required, and such a temperature can only be attained in a fire or furnace provided with a strong draught. The writer has obtained small buttons of pure silver, weighing up to 100 grains, from the sulphide and chloride, by fusing with bicarbonates of soda and potash, using a good kitchen range where a strong draught was available, the fire being thoroughly cleaned

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and made up with fresh coals. Not less than forty minutes were required for the operation, with the draught full on. If the operation has been successful the rounded outline of the button of silver will be distinctly visible in the glowing mass at the bottom of the crucible, of a somewhat duller red. The silver will solidify almost immediately after removing the crucible from the fire, and the contents may then be poured out onto a clean hearth to cool. If allowed to cool in the crucible, the latter will have to be broken to get out the silver, or plunged bodily in boiling water until the mass of fused salts is dissolved away. The button of silver must be carefully cleaned from any adhering particles of the soda and potash salts, which is best done by boiling in dilute hydrochloric acid. The silver may then be dissolved in pure nitric acid diluted with an equal quantity of water, and the solution evaporated till crystals begin to form.

The purification of the silver sludge may also be effected by the following wet method, dispensing with the need of a furnace. The sludge is boiled in a flask or beaker with commercial nitric acid, diluted with two or three times its volume of water, until nothing further passes into solution. This operation should be conducted in a stink cupboard or other place where the fumes given off can readily be conveyed away. There will probably be an insoluble residue of sulphur and other impurities, which must be filtered out from the solution. The silver is now precipitated as chloride by adding a clear solution of common table salt until no further precipitate is formed. Much excess of the salt solution should be avoided, as it will dissolve a portion of the silver chloride. The silver chloride is thoroughly washed by decantation and covered with dilute, pure sulphuric acid (about 1 to 10). Some clean iron wire, or iron nails free from rust, is then thrown in among the silver chloride and the whole left for twenty-four hours. The chloride will be completely reduced to metallic silver in a gray, spongy form, which must be washed free from the acid solution. In this form the silver is dissolved with great rapidity by nitric acid, and care should be taken to use a large vessel and to dilute the acid with at least twice its volume of water before pouring it on the silver.

Another method in use for the recovery of the silver from old fixing baths consists in adding to them a solution of potassium sulphide, called also "liver of sulphur." This causes a precipitation of the silver as sulphide, a black, heavy powder. It would be dealt with somewhat similarly to the metallic silver obtained by the zinc method. It is soluble in boiling nitric acid, leaving a residue of sulphur. The objections to the method are the extremely disagreeable odor of the potassium sulphide solution and its rapid decomposition, necessitating a fresh solution being prepared whenever required. On the other hand the recovery of absolutely all the silver is assured by this method, whereas, it appears from the writer's experiments, a small proportion of the silver, something less than 5 per cent., escapes reduction by the zinc method. If the sulphide method be used, the old fixing baths are allowed to accumulate till the storing vessel is nearly full, when a fresh, strong solution of potassium sulphide is stirred into the bath until the color of the precipitate formed changes from black or dark brown to a light yellow color. It is unnecessary to continue to add the potassium sulphide until no further precipitate is formed, as sometimes stated, since, after all the silver is precipitated, further additions of potassium sulphide cause a precipitate of sulphur by reacting with the hypo itself, and the point of complete precipitation of the silver may be readily known, as stated above, by the change from a dark-colored, heavy and bulky precipitate to a light-colored, thin, cloudy one, which does not readily settle out. After settling, a sample of the clear liquid is taken in a test-tube and tested with a few drops of the sulphide of potash solution; if found to be free from silver, according to the indications given, it may be run away. The zinc method will be found by amateurs much the preferable, the small amount of loss being easily compensated by the gain in time. Where there is a very large consumption of silver-sensitized materials a small tank or cask may, with advantage, be used for storing and desilverizing the used hypo. This should be fitted with a stopcock a few inches from the bottom, or the hypo when freed from silver may be run off by a siphon.

We must now consider the question of the proportion which the value of the silver we may expect to recover bears to that of the materials used. If we know the amount of silver salts in a plate of given size we can easily calculate the amount of silver it should yield, and, making due allowance for loss and for silver deposited in the negatives, we can find a percentage figure for the expected recovery which shall be, for practical purposes, constant, and, since the price of silver does not vary to any great extent, though it fluctuates slightly and periodically, we have at once a practically constant percentage on the value of the materials consumed. Having made analyses of several plates, the writer finds that this constant may be taken at 5 per cent., and believes that, for all practical purposes, this will be found a safe guide. Moreover, it is in accordance with his actual results in a recovery of silver residues.

Having this constant, 5 per cent., at his fingerends, the photographer can tell at a glance, knowing the quantity of materials he uses, whether it is worth his while to give attention to the recovery of his silver residues.—*The Practical Photographer.*

HANDS

HANDS are a powerful element in expression. As an index of character they have always been given a high place by portrait painters. It cannot be said, however, that many photographers have given hands the same degree of attention.

Photographers, as a rule, have tried to hide the hands as much as possible instead of using them as a means of getting more character into their portraits. This is due, no doubt, to the difficulty of keeping them from looking too large when they happen to be nearer the camera than the sitter's face. So often has this difficulty been referred to that many sitters have the impression

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that "big hands" cannot be avoided in a photograph. This makes the photographer do his best either not to show the hands at all, or to keep them as close to the sitter as possible. The pictures often reveal the fact that the photographer has had considerable difficulty in posing. There is stiffness and awkwardness in the attitude and uneasiness in the expression—the face seems terribly conscious of the hands.

Once a photographer fully realizes the value of hands in a portrait, he very soon sets himself the task of overcoming the many difficulties in rendering them.

No professional needs to be told that he cannot make full use of hands in his portraits if he has to work in a confined space with a short-focus lens. It is absolutely necessary to be a good distance from the sitter, and therefore a long-focus lens is essential.

The more you try to pose the hands the more you are likely to get into trouble. Never call your sitter's attention to them—your pose will be ruined if you do. Hands, like children, often become unruly when they have nothing to do. When appropriate, try to represent the hands as doing something, but giving a hand something to do does not necessarily mean giving it something to hold.

A hand always looks stiff and formal when it is spread with the fingers equal distances apart, and to have all the fingers doubled up to the second joint looks as if part of the hand had been amputated.

The lighting of the hands must not be overlooked. On no account must they appear as two spots of light, claiming equal attention and fighting against the head for the first place in the picture.—*Photo-Digest.*

A War-time Saving

At the present time, when all chemicals are advanced in price (some out of all proportion with others), it is wise to see how far those which are less advanced may be substituted for the more costly. I had to prepare recently some neutral sulphite solution such as is used in the making of the A mixture in the pyro developer. For those who are not already acquainted with this I may say that pyro developer, made with neutral sulphite instead of acidified sulphite, requires less alkali in the B solution, and is therefore less likely to cause pyro stain and more lasting in use.

The formula usually given is as follows, the ingredients being dissolved in the order given:

Sodium sulphite (crystals)	2 oz.
Cold water	15 oz.
Potassium metabisulphite	¼ oz.

Calculating out the available acidity of the metabisulphite, it appears that a quarter of an ounce may be replaced by 30 minims of concentrated sulphuric acid, specific gravity 1.8 (this is the "pure sulphuric acid" of the chemist), together with a quarter of an ounce additional of sodium sulphite, and at the present prices this can be done at one-third the cost of the metabisulphite. One very important precaution is, however, necessary, and that is to reverse the order of solution. In the former case we add solid metabisulphite to the dissolved sulphite. In the alternative we must add solid sulphite to the dissolved acid. To mix the two in solution causes failure. The formula will, therefore, read:

Pure sulphuric acid (sp. gr. 1.8)	30 min.
Cold water	15 oz.
Sodium sulphite (crystals)	2¼ oz.

As the amateur will usually prefer to make up a smaller quantity, I suggest the following procedure: one fluidounce of sulphuric acid is added to nine ounces of water (not *vice versa* or dangerous ebullition may occur). This is kept in a stoppered bottle labelled "Sulphuric acid 1-10." A six-ounce medicine bottle (rinsed free from any which remains of a previous lot or sulphuric acid will be dissipated) is nearly filled with water and 120 minims of the 1 in 10 sulphuric acid added; the mixture is shaken and six and a half drams of the solid sulphite added to it. The bottle is filled up with water if necessary, corked, and put down on its side, turning it over a few times until the sulphite is dissolved. In tabular form the quantities are—

Diluted sulphuric acid (1-10)	120 min.
Water (cold) to make	6 oz.
Sodium sulphite (crystals)	6½ dr.

This solution corresponds with that made with metabisulphite except that a little sulphate is formed as a by-product. This, however, makes no difference in development. In fact, the sulphite used by photographers always contains more or less sulphate as an impurity.

The only danger is in adding too much acid, but, provided the final solution does not redden blue litmus paper, indicating excess of acid, there is no fear of error. Should excess of acid be used—and the same might arise in the use of metabisulphite, as samples of sulphite vary in alkalinity—it may be put right by the addition of a few crystals of sulphite. On the other hand, when the amount of acid used has not been quite sufficient, the only differeuce will be that the keeping properties of the A solutlon of pyro will be lessened. Since, however, with crystal pyro it is so easy to weigh out a few grains, most amateurs will prefer to make their A solution at frequent intervals rather than keep a stock. The same applies to the solution of neutral sulphite.

Perhaps a more absolutely unjustifiable waste is seen in the preparation of the acid fixing bath. The formula is:

Hypo	4 oz.
Water	1 pt.
Potassium metabisulphite	¼ oz.

Instead of this, we may dissolve in a pint bottle four ounces of hypo in ten ounces of water. In another bottle, two drams of the 1 in 10 solution of sulphuric acid are added to ten ounces of water, and then two drams or more of crystallized sodium sulphite. Slight excess of sulphite is no detriment. Excess of acid must be avoided. The mixture is shaken until the sulphite is dissolved, and then the acid sulphite solution so made is added to the hypo in small quantities—

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say two or three ounces at a time—shaking after each addition. On no account may the hypo be added to the acid. The saving in cost at present prices is eleven pence in the shilling on the cost of the metabisulphite, and there is no question as regards the equal efficiency of one or the other.—T. H. GREENALL *in Photography.*

HIGHLY phosphorescent calcium sulphide, it is stated in *Comptes Rendus*, can be made by heating precipitated chalk with 30 per cent. of its weight of powdered sulphur in a close crucible for over an hour, then impregnating the cold product with a trace of bismuth, in the form of an alcoholic solution of bismuth nitrate, again heating the mixture for two hours at a temperature of a dull red heat, and then allowing the crucible to cool slowly in the furnace, the crucible being left luted. The presence of sodium carbonate or chloride in the original mixture has no appreciable effect upon the phosphorescence.

TIME DEVELOPMENT WITH AMIDOL

H. LEYTON gives the following formula for amidol by means of which negatives of any strength may be obtained by employing different multiplying factors.

We require a stock solution of sodium sulphite (10 ozs. in distilled water 40 ozs.), a 10 per cent. solution of potassium bromide, and a small bottle of amidol in powder. To compound a developer for negatives we take:

Sodium sulphite solution .	1½ ozs.
Water (distilled)	6 ozs.
Bromide solution	60 min.
Amidol	18 grs.

In very cold weather the amount of bromide may be reduced, as the action is slower. The amidol is weighed out in powder form and added just before development begins, allowing sufficient time for dissolving.

Let us suppose that the factor for a normal or P.O.P. negative is 12. By shortening the factor we can get a softer negative, and by increasing it we can get a harsher negative. When desiring a negative for P.O.P., using the developer already given, a factor is taken of 12, for enlarging 8, for carbon 10, for platinotype 18.—*Photographic Monthly.*

CLEANING CAMERAS

THERE is no odd-time job which will better repay an industrious assistant than cleaning up a neglected studio camera and stand. Although there are many ebonized cameras about, mahogany is still the favorite, and it is not uncommon to see the wood encrusted with black greasy dirt, sometimes due to handling, sometimes to sweating of the polish, and sometimes to the injudicious use of cleaning pastes which have not been thoroughly rubbed off. To make a start on a really dirty mahogany camera nothing is better than ordinary turpentine applied with a piece of rough flannel. This must be well rubbed on until the dirt shifts. Mouldings and crevices must be treated with the flannel stretched over a pointed piece of wood. When quite clean the surface will be rather dull and require a little polishing. This is best done with a little olive oil and vinegar mixed in equal parts in a saucer, rubbed on sparingly with a bit of flannel, and polished off with a dry duster. This mixture may be used occasionally to clean and preserve the surface. Pastes and creams will usually give a higher polish, but they require more rubbing to clean off and are apt to show fingermarks. After attending to the woodwork, a touch of oil or vaseline upon the racks and pinions and the Archimedian screw of the stand will tend to smooth working.—*British Journal of Photography.*

THE EXPOSURE IN CINEMATOGRAPHY

THIS is the day of films in picture theatres, and the demand for them is sure to increase. The studio photographer desirous of a new line, and foreseeing apprehensively the inevitable end, with the war, of the present boom in khaki portraits, is once again strongly advised to make himself familiar with the use of the cinematograph camera.

In almost every case the chief difficulty of the ordinary photographic worker on first making acquaintance with cinematography is that of the exposure. When taking still pictures he has been accustomed to vary the mechanical speed of the shutter by altering the tension of a spring, or in other ways, whereas for motion-picture work the mechanical shutter speed remains constant, and consecutive exposures have to be made at a regular rate, the only variation possible being in the size of the shutter opening or in the lens aperture. A simple explanation of the factors regulating exposure in cinematography may prove useful to many.

The shutter of the cinematograph camera is a rotating disk consisting of two overlapping sectors of a circle, pivoted at the centre in such a way that the opening may be rendered larger or smaller by sliding one sector over the other, a screw being provided to fix them in any desired position. It is believed that the essential principle of this type of shutter was first suggested by Mr. Chapman Jones in *Year Book of Photography*, 1885, p. 54. It should be stated, however, that some of the less expensive cameras have a single fixed shutter opening.

For all ordinary work the shutter is geared to make sixteen revolutions and exposures per second, which with the majority of cameras means two turns of the handle. Thus, the mechanical speed of the shutter is 1/10th sec. It is only for certain "trick" subjects and in a very few special cases that the speed of turning is altered. It is clear that by manipulating the size of the opening the actual exposure may be widely varied, on much the same principle as that regulating the slit of a focal-plane shutter. An opening of half the disk, or 180 degs. of a circle, means an exposure of 1/32d; one-third of the disk, or 120 degs., is equal to 1/48th sec.; one-quarter of the disk, or 90 degs., to 1/64th sec.; and so on.

It is remarkable to how great an extent modern practice agrees with early ideas regarding the correct shutter opening for normal subjects. The majority of operators nowadays use a shutter opening of one-third, equivalent to 1/48th or 1/50th sec., for an average subject

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in a good light, and this has even been claimed as a comparatively recent suggestion. As a matter of fact, that identical exposure was recommended as long ago as 1897 by Louis Gastine, in *La Chronophotographie*, and is possibly of still remoter origin. The stop, too, now commonly employed with this shutter aperture, namely, *f*/8, is that familiar to generations of hand-camera workers for average outdoor subjects. Looking, for instance, at an early volume of Fallowfield's *Photographic Annual* we find the words: "When next those people take a snapshot . . . they will in all probability use *f*/8 and 1/50th." Truly, there is nothing new under the sun! The up-to-date cinematographer, for the vast majority of subjects, unconsciously follows, and cannot improve on, the practice of past still-picture workers, whom he probably regards as "back numbers."

Taking "*f*/8 and 1/50th," then, as the standard exposure for normal occasions, the photographer should have little difficulty in arriving at that required for other subjects, or in different conditions of lighting. Thus, for seascapes in a bright light, a shutter aperture of one-third and stop *f*/16 may be used; while for winter work, or on dull days, the largest opening of the lens, say *f*/4 or *f*/3.5, will be needed. Here, again, we have little to learn which cannot be obtained from early sources. For example, referring to what is believed to be the first edition of G. Ardaseer's *Short Lessons in Photography*, we find 1/50th sec. at *f*/16 quoted as the correct exposure for sea and sky.

. The cinematographer of today is apt to think it a new law of his own devising that the diaphragm opening should be decreased in preference to reducing the shutter aperture, but this is very old advice. Ardaseer, for instance, in the work above-mentioned, says: "If the light is very bright, rather decrease the size of the diaphragm than increase the speed of the shutter."

The following table will give an idea of the stop required for various subjects under different weather conditions, in May, June, and July, from 10 A.M. to 3 P.M. For other times, the exposure should be multiplied by the figure to be found in Dr. Scott's well-known table, and a correspondingly larger stop used.

Cinema Exposure Table for One-third Shutter Opening

Weather.	Subject.		
	Seascapes, panoramas.	Open landscapes, lake, river, and beach scenes.	Landscape, heavy foreground, street scenes.
Bright sunny	*f*/16	*f*/11	*f*/8
Cloudy . . .	*f*/11	*f*/8	*f*/5.6
Dull	*f*/8	*f*/5.6	*f*/4

Where, however, the light is bright and the subject is of a landscape or panoramic nature, without any rapid movement, it should be remembered that stopping-down the lens will detract from the rendering of breadth, distance, and what the pictorialist calls atmosphere. In such a case it is better to diminish the shutter opening than to use a smaller stop.

The press photographer, accustomed greatly to reduce the slit of his focal-plane shutter to prevent blurring in rapidly moving objects, is apt to feel sceptical when told that such a proceeding is unnecessary, and, in fact, objectionable, when taking cinematograph films. The reason is simple. Since a number of pictures are taken in quick succession with a brief interval between each exposure, during which the film is being changed, it follows that objects in very rapid motion will have moved appreciably forward, or have had time to assume a different relative position, between any two exposures. The same principle is involved, under another form, in the curious examples of distortion sometimes obtained with a focal-plane shutter, even at a high speed. If, then, such a series of slightly differing film pictures, though each individually sharp, is projected on a screen by the cinematograph, a jerky effect is produced, or overlapping outlines may be shown. This is often seen in comic films of the rough-and-tumble type, and is by no means pleasing. Experience, therefore, teaches that it is better to content oneself with a larger shutter opening, which may show a slight movement-blur in separate film pictures, since the indistinctness of one picture will blend into that of another on the screen, and will be practically unnoticeable. This undoubted truth, still fighting its way against some opposition, was very clearly explained by Eugene Trutat in *La Photographie Animée* (Paris, 1899), and was alluded to a year earlier by Cecil M. Hepworth, in his *A.B.C. of the Cinematograph*.

So much for the theory of exposure in making motion pictures. As regards practice, the matter is fortunately simplified by the excellent meter designed by Mr. Alfred Watkins for that special purpose. With this, the light-value can be accurately tested in a few seconds; then, on setting the film speed against the light-value, the correct stop to use will be found against the speed of the shutter. From an examination of the very complete film and plate speed list supplied with the meter, it appears that the average cinematograph film is about equal in speed to a "special rapid" plate.—A. LOCKETT, in *British Journal of Photography*.

WHEN IN DOUBT—A SERIES OF PRACTICAL HINTS

When in doubt as to correct exposure it is cheaper to use two plates, giving different exposures, and so make pretty sure of getting one good negative, than to risk all on one uncertain exposure.

When in doubt as to a lighter or darker mount, make two similar prints, lay one on a dark, the other on a light mount, cover both with glass, and then ask someone who has not previously seen the pictures to say which they prefer. A "fresh-eye" opinion is always worth considering.

When in doubt as to whether you will or will

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not carry on development a little longer, "on account of the shadow detail," take the old advice of "Don't." It is easier, safer, and generally better in effect to under-develop slightly and intensify, than to over-develop and reduce.

When in doubt as to a little longer or shorter exposure, there are two partners in the problem to be considered, *viz.*, (1) general effect and (2) the dominant note. If you are aiming at contrast give the shorter exposure, but if you desire gradation give the longer exposure. If the dominant note is a high-light, give the shorter exposure, but if it be shadow detail, give the longer exposure.

When in doubt as to a larger or smaller stop, let your aim for general effect have the first say on the question. The smaller stop will give sharper detail in one plane, and the greater depth before and behind this plane. It means a longer exposure—which may be a determinant in the case of moving objects. It also tends to give a less brilliant effect. The larger stop permits a shorter exposure and gives a brighter effect, but is apt to emphasize distance difference by strongly contrasted definition (or its absence) in different planes.

When in doubt as to including or excluding this or that, either when selecting (composing) the subject or when trimming the prints remember the old saw," When in doubt, leave it out." Uncertainty about any feature shows that it is not felt to be essential. The fewer (in reason) the objects or features in a picture, the less there are among which our total interest or attention is to be divided, and so the more each may receive. Simplicity is always stronger than complexity. It is the simple composition that attracts and retains attention.

When in doubt about a high or low horizon, the deciding vote may often, but not always, be found in the answer to the question, "Where is the chief interest?" Those subjects which are best suited by a high horizon, usually have their chief interest in the nearer planes. But the converse of this is not always the case. A high horizon usually implies that our chief interest is best seen when the head is tilted somewhat forward.

When in doubt about the focal length of a lens for pictorial effect, remember that usually a folio picture—*i. e.*, up to 12 x 10 or 15 x 12 size—is generally viewed at from ten to fifteen inches from the normal eye. For prints quarter-plate to whole-plate the distance is very generally about ten inches. The nearer we can get to these eye conditions by focal length of lens, *i. e.* viewing distance of the negative, the nearer will our perspective be to normal impression.—*Amateur Photographer.*

Enlarged Paper Negatives

These are days in which economy is assuming a continually increasing importance, since almost every new maker's list announces some fresh rise in the price of materials; and when an economical method also offers actual advantages over a more expensive one, it is well worth the consideration of photographers.

Both enlarged negatives and paper negatives are well known, but I do not think that either receives the attention from beginners in pictorial work that it deserves. There is no process which gives the same power of control over the final result, or gives more scope for the individuality of the worker, as the enlarged negative: even bromoil does not enable one to steepen or flatten contrasts to the same extent; while the great advantage of a large negative in having the result, once obtained, fixed and permanent, capable of infinite reproduction by simple straight printing in a printing frame, puts it a long way ahead of any of the hand-control processes.

By the use of the following method an enlarged negative can be made at a reasonable cost and, if a number of prints are required and allowance is made for spoilt material, probably with greater economy than by direct enlargement.

The first necessity is a transparency, which I always make by contact the same size as the original negative. At this stage an enormous amount of control over the contrasts of the original can be obtained; but this is best done, not by dodging the exposure or developer, but by the choice of the plate to use. If the negative is too flat, use a slow plate, such as a "fine-grain transparency" or, better still, a "process." If the negative is too hard, use an ordinary negative plate of a speed of about 200 H. and D. Print this in the printing frame behind the negative, treating it just as a piece of bromide paper, and printing in a sky, if necessary. It is not well at this stage to attempt any retouching or even spotting of pinholes: this work is much more easily done later on. The exposure should be ample, particularly with process plates, or a granular deposit will result. Develop with pyro or some other well-restrained developer; and if a soft result is required do not leave in the developer too long, as a harsh transparency is very difficult to enlarge from satisfactorily. Considerable modification can be obtained by simply varying the time of development. The transparency should not be too dense in the shadows, but at the same time the high-lights must be considerably stronger than in a lantern slide.

Enlarge this transparency up to the size required on to negative paper. Two or three makers supply paper specially for the purpose, but it will be found in practice, if the enlarged negative is not smaller than, say, whole plate, any make of thin glossy or semi-matt paper will serve admirably. For broader effects use the matt- and rough-surface papers. The exposure is made exactly like making a bromide enlargement.

Control can again be obtained at this stage. If the contrasts are still too flat, enlarge by artificial light in the lantern. If they are too harsh, then use a daylight enlarger. Give a tolerably full exposure in each instance, and modify the result, if necessary, by the time of development rather than by altering the constitution of the developer. A shorter time in the developer gives flatter contrasts. Development must be carried farther than in a print until the highest lights are distinctly veiled; but at the same time a paper negative always appears

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much flatter when viewed by transmitted light than it really is, and care should be taken not to over-develop, or the high-lights will be chalky.

When the negative is dry, handwork to an almost unlimited extent can be done with ease on the back, the paper support forming a perfect surface. Small lights can be strengthened with leadpencil and larger areas with a tuft of the cotton-wool rubbed in lampblack. Shadows can be lightened by Bildup or Canada balsam dissolved in turpentine.

It is frequently objected that the grain of the paper is unsightly; but with special negative paper printed in diffused light, or with the thin varieties of bromide paper referred to above, the grain is negligible. Personally I prefer a slight grain, especially in large sizes, as it seems to give the same effect as a rough-surface paper, breaking up otherwise monotonous areas.

The above method is cheap, the cost of the small-sized transparency being little, and the bromide paper being, of course, considerably less expensive than large-size plates.

There is, moreover, the added advantage that a number of contact prints can be made from the enlarged negative (used in a printing-frame with a sheet of plain glass) of a quality frequently excelling that obtainable by direct enlargement. —*Amateur Photographer.*

Cleaning Photographic Bottles

On running short of bottles for photographic use, it often comes in handy to clean out a bottle or two, which in some cases may have been used previously for chemicals of corrosive or bad staining propensities. The methods which have answered most satisfactorily in this respect in my own case are those methods set forth below. To clean a corroded bottle, first rinse the bottle out with clean water, afterwards pour into the bottle, say, an ounce of full-strength spirits of salts. After leaving the acid in the bottle, or rather shaking it about a few minutes to allow of full action on the corrosion, pour the acid out, and, to avoid all risk of burning or blistering the flesh with the acid, again rinse the bottle out with plain water. Next take a piece of coke or, failing this, a large cinder, and break it up with a hammer into small knobs. Afterward place these knobs of coke in the bottle, and fill the bottle not more than a quarter full of plain water, then insert the cork, and vigorously shake the bottle about until all the corrosion disappears, leaving the bottle quite clean and clear. Pour out the contents of the bottle, and finally give both bottle and cork a good rinsing with clean plain water, after which nothing further remains to be done. Permanganate of potash is one of the worst chemicals for staining bottles, yet, on the other hand, it is one of the stains easiest got rid of, for a very small quantity of oxalic acid poured into a badly stained bottle, together with a little water, and shaken about for a few minutes, will work wonders, and in the end give a bottle quite free from all signs of the stain. For all ordinary stains and bottle-cleaning purposes, spirits of salts will generally do all that is required. Spirits of salts being cheap as well as effective for this purpose, every photographer would do well to keep a bottle of it ready to hand in his dark-room, either on a high shelf or under lock and key out of harm's way. The acid can be used over and over again; in fact, until exhausted. If the bottles to be cleaned are first rinsed out with clean plain water, that is before pouring in the spirits of salts, the acid will remain in a good clean condition for a very considerable length of time, even with very frequent usage. Practical experience has taught me that a developer will keep in a good condition for a much longer period if the bottles are always first cleaned out with spirits of salts, and afterward rinsed out with plain water before mixing up a fresh stock solution.—*Amateur Photographer.*

Report by Ansco Research Laboratory on Liver of Sulphur Toning

One variation of sulphide toning consists in the use of impure potassium sulphide, sold commercially as liver of sulphur. This material is very impure, and its varying composition doubtless explains the differences which are experienced in its use as a toner.

Liver of sulphur has a marked softening act on gelatin prints, which should always be hardened by using a fixing-hardening bath. It is also better not to dry the prints between fixing and toning.

When making up the bath, the liver of sulphur should be dissolved in boiling water, and the bath allowed to cool down to about 105° F., and the ammonia then added. The bath should be used at about 100° F. The toning action takes place in a few minutes, giving prints of a rich brown color, although results obtained vary considerably with different workers.

A few years ago an important improvement in the use of liver of sulphur for toning was made by Mr. E. Fenske. It consists in using the liver of sulphur in conjunction with hypo, the formula being as follows:

Liver of sulphur	¼ oz.
Hypo	½ oz.
Water, warm	20 ozs.

This bath is intended for use at 80° F.

The toner is supplied commercially by Mr. Fenske, and gives very beautiful brown and sepia tones. The bath appears to stain the print, but this stain is entirely removed in the wash water. The toning mixture does not keep at all well, and should never be used the second time. This method of using liver of sulphur has been patented by Mr. Fenske.

Ansco Research Laboratory.

Some Little-known Printing Dodges

Most printing dodges resolve themselves into methods for printing-out one part of a negative while the rest prints more slowly or not at all. It is surprising how great an improvement can often be made in the result by some very simple device for doing this.

Local work of this kind is much easier when

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the work is done by daylight on p. o. p. or some similar paper than when a development paper, such as gaslight, is used. It can be done more deliberately, and the result can be seen at the time, and a little more done until we get just the effect we wish for.

For daylight work a large reading glass in a handle is very helpful. I have been able to bring out all the detail in a badly halated east window with its aid. It necessitates doing some of the printing at least in direct sunshine; but although we are cautioned against this, I never quite knew why; it seems to have no ill-effects at all.

The printing frame may be held in one hand and the reading glass in the other, the glass being used to concentrate the rays on an area not smaller than a fifty cent piece. If the rays are brought more to a point than this there is always a danger of the heat cracking the negative, although the patch of light is kept moving all the time. This movement is imperatively necessary. The strong beam from the reading glass acts on the sensitive paper just like a great blunt pencil, and we have to do our shading down with it, and so must keep it moving, so that this shall be gradual and not so definite as to show what has been done.

In the case just referred to, the first thing on putting out the negative to print is to use the reading glass on the window and its immediate neighborhood until the details there are well printed out. The frame is then put in a diffused light for the rest of the picture to print out.

One often finds that a negative has a light edge, or a light corner, which would look much better darkened down. This is frequently the case with portrait negatives, where the whole borders of the picture are best darkened down, concentrating the lighting in the centre. When only one edge needs such treatment a good plan is to put the frame on the ground some little distance from a building, and just within its shadow. It is so arranged that as the sun moves, the shadow gradually passes off the frame, beginning at the edge which is to print darker. The most beautifully soft gradation can be got in this way. If necessary, the frame can be moved as soon as the sunshine reaches a certain point, and placed just within the shadow again so that the process is repeated.

With gaslight paper other methods have to be used to get the same effect. A graduated result is easily obtained by placing the frame at an obtuse angle to the light. The edge of the picture which is to be darker may be four inches from the gas, while the opposite edge may be six or seven. This gives a very soft effect. The difference between the exposure at the two ends of the negative, so long as the angle is the same, can be controlled by the distance of the frame as a whole from the light. The nearer it is, the greater is the difference, as a moment's reflection will show.

A soft vignette with gaslight paper is not at all easy to obtain; there is a kind of knack about getting it. Ordinary vignetting devices can be used, but not with a concentrated source of light. If magnesium ribbon is used, a good sized sheet of ground-glass, or of plain glass covered with tissue paper, should be fixed up about three times as far from the printing frame as it is from the magnesium, and the ribbon burned behind that, keeping it moving the whole time. Another good source of light for such work is to turn the enlarging lantern, with all but its condenser removed from the front, on to the sheet of ground-glass, and do the printing a foot or two from the glass. The lantern must be so placed that the diverging beam covers a good part of the glass.

If the exposure is made to an incandescent gas burner a soft vignette can be got by covering the frame with a card with an opening over which a piece of tissue paper is pasted in the usual way. The frame must be held in the hand and kept moving the whole time, not as regards its distance from the light but as regards the angle it makes with it. By "wobbling" the frame in this way, keeping the cardboard well in front of the negative, it is easy to produce the most delicate vignettes.—*Photography.*

Basic Chrome Alum

Chrome alum as bought is an acid salt, and for hardening purposes it has been suggested that basic chrome alum is to be preferred. The easiest way of obtaining this is to make a solution of the required quantity of the ordinary chrome alum, and then to add ammonia, drop by drop, with constant stirring, until the precipitate which first forms just fails to redissolve. No more ammonia than is needed to bring this about should be used.—*Photography.*

Spots on Prints

A careful examination of the spot on a print will often give useful information as to its cause, and so offer suggestion for prevention in the future. A magnifying glass is a help in this connection. If the spot has an irregular abrupt outline, it is probably due to some foreign body of an insoluble character injuring the picture in that place; and if that foreign body is still present it may be seen, removed by picking it off with the point of a needle, and the place carefully spotted out. Spots that vignette into their surroundings are generally caused by soluble substances getting to the surface of the print when wet. Such spots often show a distinct centre or nucleus where the original contamination took place. If this happened before or during the processes preceding drying, the current of solution over the spot may have made a streak proceeding from it, giving rise to the term "comet" which is applied to such marks. This is a very characteristic form. When the spot, however small, is seen to be perfectly circular and with a well-defined boundary, it is almost sure to be due to an air-bell adhering there during part of the process. Dark spots on the paper, which vanish when the print is pressed firmly down upon a sheet of white card, are caused by grease.—*Photography.*

Toning Bromide Prints with Gold

Ordinarily no improvement would be likely to result from toning a good bromide or gaslight

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print with gold or platinum, since each of these metals tends to give a black image—violet-black in the case of the gold, brown-black in that of platinum—and the image is already a good black. But if it is at all weak, the deposition of further metal upon its image might be expected to strengthen it. The silver forming the image, however, is not directly susceptible of toning, and the print placed in a toning bath of the kind used for p. o. p. would not be affected. By acting upon the image with mercuric chloride, in the same way that a negative is treated in mercurical intensification, the composition of the image is modified, and toning is made possible. Anyone wishing to obtain tones a little different from those usually produced might like to try these processes. All that is necessary is to place the print in a weak solution of mercuric chloride for a few minutes until the image has bleached. It is then well washed, first in two or three changes of very dilute hydrochloric acid (one part of acid to forty or fifty of water), and subsequently in plain water for ten minutes. Such a print placed in the usual sulphocyanide and gold toning bath turns to a rich violet-black. If a brown-black is required the image after bleaching is darkened in some non-staining developer, as, for instance, dilute Azol, and is then toned in a platinum toning bath of the kind that is generally recommended for use with plain salted papers. In each case the operation is completed by giving the prints a thorough washing.—*Photography.*

Acetone for Carbon Work

Sensitizers which dry rapidly are very convenient for carbon work, as they allow tissue to be sensitized and used within a few minutes. This is generally accomplished by means of alcohol, but acetone may be added to the bichromate solution in place of alcohol with the same result. A formula given for this purpose some little time ago prescribed six drams of potassium bichromate dissolved in ten ounces of water, to which were added fifteen ounces of acetone.—*Photography.*

Flattening Prints

When paper is coated with gelatin, as in bromide, gaslight, and p. o. p. prints, it always has a tendency to curl with the gelatin-coated side inwards, unless steps are taken to counteract this. If the prints are to be kept flat, in fact, they should in the first place be given a curl in the opposite direction, which they will then gradually lose. The way to do this is to bend the edge of the print round a paper-knife or some other angular object, but it is easy to spoil a print while doing so. The usual plan is to put the print face downwards, hold the paper-knife firmly down on it, and then drag the print round. The result is that the face of the print is violently rubbed upon whatever supports it and so is damaged, and, in addition, there may be creases made of which it is impossible to get rid. The proper way to carry out the operation is to put the print face downwards, to hold down upon it the paper-knife, or whatever is used, and then, while raising the paper against the edge of the knife, to slide this away from the raised edge, so that the print does not slide along its support at all, but is merely lifted away from it. This saves all rubbing. To avoid creases, the pull of the print against the edge must not be begun or terminated abruptly. It should be begun gradually, and then made greater and greater until the knife passes off the end of it. Any curl in the end which is picked up first should be got rid of by reversing the print. It is a good plan to draw it four times round the edge of the knife, starting each time from a different end. If it is very important not to rub it, a sheet of thin smooth paper may be laid on the face of the print and pulled round with it; but this should not be necessary.—*Photography.*

Stain Removers

Just about two years ago I dealt with stains on negatives, but it is a subject to which one may appropriately return at the present time, for the reason that staining in development appears to be giving somewhat more trouble just now, no doubt as the result of a natural desire to economize in the use of developers, possibly also from variations in the chemical composition of developing agents themselves, as the outcome of which a given formula, although previously free from any liability to stain, may now prove to have a distinctly staining tendency. Let me distinguish between stain and stains. By the former I mean an even stain over the whole negative, generally as the result of development, and representing the oxidation product of the developer itself retained by the gelatin film. Stains, on the other hand, are here taken to be of a patchy nature, and therefore are more difficult to deal with, particularly those arising from incomplete fixation of the plate, for which, indeed, there is no satisfactory remedy.

Measuring the Focus of a Lens

Among the many methods which have been described for performing this operation, the following may be found the most convenient by some: The first proceeding is to focus some distant object as sharply as possible; it must be so distant that everything beyond it is also in focus at the same time. Marking the camera extension when this is the case, a foot rule or part of one is focussed on as large a scale as the extension of the camera will conveniently allow, and the difference in the camera extension between this and the first position is carefully measured. By marking off on a card or paper strip held upon the ground glass the divisions of the rule as they appear, we can compare the scale of the image with that of the original rule. We thus find the ratio of the original to the image, and, multiplying the camera extension by this, we get the focus. Thus if a length of two inches on the rule is represented by five inches on the ground glass the ratio is two-fifths; and if the difference in extension is thirteen inches, the focus is two-fifths of thirteen inches, that is to say, as nearly as possible five and a quarter inches.—*Photography.*

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Slight Stain: Clearing Baths.—The general slight stain given by such developers as pyro or pyro-metol is still largely referred to as a desirable quality in a negative, although I am inclined to think that that opinion is now held simply as a relic from the days when print-out papers were those most generally in use. I cannot find that there is any advantage, but rather the reverse, to be discovered in a negative of this class, when used for gaslight or bromide printing, as compared with one in which the image consists of black silver deposit in clean gelatin. In fact, there is much to be said against a yellowish or greenish negative for use under the conditions which almost universally prevail at the present time, for stain of this kind is bound to be somewhat erratic in the degree in which it occurs, and, therefore, makes it a matter of greater difficulty to judge the printing speed of a negative for bromide or gaslight work with the same degree of exactitude which is possible with a clean negative. For that reason there is good cause under present conditions to adopt the recommendations which for many years have been kept prominently before photographic workers in the writings of Mr. Chapman Jones—namely, to secure the greatest possible freedom of the silver image from added stain.

Much can be done to that end without calling in the aid of the mild forms of stain remover, which, perhaps, are better called "clearing baths." Few workers, I suppose, nowadays give negatives anything more than the most perfunctory rinse between developing and fixing, but a five-minute wash in water will tend appreciably to a blacker color of the negatives, as will also, of course, the use of a fixing bath made up with sulphite and an acid in addition to hypo, or with metabisulphite. I know here that I am falling foul of Mr. Chapman Jones' taboo of acid bodies in the fixer. While, no doubt, an alkaline fixing bath is the one which yields a negative which will keep its black color for an indefinite time, yet the degree of stainlessness which is obtained at once with the customary type of acid fixing bath serves, so I think, the purpose of most business photographers, whose negatives, in the great majority of cases, are used as soon as they are made.

In addition to these preventive means, advantage may be taken of the clearing properties of a bath of chrome-alum, ½ oz.; hydrochloric acid, ¼ oz.; water, 20 ozs., or one made by dissolving 90 grains of thiocarbamide and 90 grains of citric acid in 20 ozs. of water. The latter is a considerably more expensive solution. For the particular purpose of removing slight stain only, the chrome-alum bath is amply sufficient. Either bath is used after the negative has been washed from the fixing bath for about one hour.

Heavy Stains: Chemical Removers.—The problem here is a different one and calls for more drastic measures in the case of negatives which have heavy, deep, general stain, such as arises from long forcing of a plate in development, or from the use of a developing solution which has become of dark color by previous use. Diamidophenol, although classed among the non-staining developers, will give rise to a very persistent brownish stain at times, and one which is, perhaps, the least easy of all to remove. Hydroquinone, again, rarely stains, but when it does the deep-yellow negative is one which it is by no means easy to clear from stain. In such circumstances as these one of the most powerful stain-removers used by workers in the old days is that compounded of bleaching powder, the moist chlorous-smelling material which one buys from the drysalter. About an ounce of bleaching powder is added to a solution of about 1½ ozs. of washing soda, previously dissolved in 6 ozs. of water. The solution should be cold, and the bleaching powder well stirred or shaken with the soda solution. Then this milky mixture, containing a good deal of insoluble matter, should be run through a filter paper on a glass funnel. The clear liquid which passes through is an active remover of pyro stain, even when of great depth or long standing. It requires to be used with caution, since it has a strong softening action upon the gelatin. It should be kept upon the plate no longer than is necessary, otherwise the emulsion may become so soft that it is liable to "run" in subsequent handling. The clear solution may be made still more active as regards stain by adding to it a little oxalic acid (a few grains), but with this addition still more care is necessary, for the reason that the mixture not only attacks the stain, but also the image proper on the negative. It is, in fact, a somewhat slow-acting bleaching solution, and therefore requires to be used with due caution, allowing it to act on the negative only for a few moments, then rinsing under the tap, and repeating the process in the same way if further applications seem to be necessary. In experienced hands it is a most effective method.

A much better plan, however, and one calling for less expert manipulation, is that suggested some five or six years ago by Mr. Blake Smith. The plan is first to bleach the negative, that is, to convert it into silver bromide or chloride. In this state it can be treated with powerful stain-remover which could not possibly be applied to the negative in its ordinary state. Mr. Blake Smith advised, in the first instance, a bleacher of bichromate, salt, and sulphuric acid, followed by an acid solution of permanganate for the removal of the stain. Subsequently he combined the two processes of bleaching and stain-removal into one by means of an acid solution of permanganate containing also sodium chloride. My own preference, however, is to follow the formulæ suggested a year or so ago by Mr. Sellors, namely, to bleach the negative in the ordinary solution used in the chromium intensification process, namely, one containing 10 grains of potass. bichromate and 5 minims of hydrochloric acid in each ounce of water. The negative bleaches in two or three minutes, is then put to wash in running water (in a covered tank, not in a dish) for about twenty minutes, and then laid for a time, from a minute or two up to ten minutes, in a solution of potass. permanganate, 6 grs.; sulphuric acid, 30 minims; water, 5 ozs. This bath is a powerful stain-remover even in the most obstinate cases. After it has been allowed to act for the requisite time it is necessary to pass the negative through

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a bath which will clear off the brown manganese deposit. Some bisulphite lye mixed with ten times its bulk of water will do this very quickly. It should not be allowed to act longer than is necessary. Best to pour the solution on and off the negative until the brown stain is seen to be gone. After giving a wash for a few minutes the negative is re-developed with amidol.

In my experience there is no developer stain which will not yield to this treatment, while the negative is not exposed to any loss of quality, formidable as the process may sound. I would only add that the deep yellow stain of hydroquinone can sometimes be quickly cleared off by rubbing the negative over with a little Farmer's reducer on cotton-wool. The mixture acts rapidly on the stain, and I have often used it without any fear that the negative itself would suffer, although I would not recommend it for negatives in which delicate tones, particularly those in dark parts of the subject, are of importance.

Developer Finger Stains.—I am afraid it is difficult to say anything useful here, since personal idiosyncrasies appear to overwhelm any differences which exist in methods for the avoidance or removal of developer stains on the fingers. Perhaps one of the simplest prescriptions which can be given, apart from keeping the fingers soft by the use of preparations such as Hazelene, is to place on the developing bench a good-size dish or basin containing weak hydrochloric acid, about 1 oz. of the strong acid in 60 ozs. of water. If the fingers be occasionally dipped in this acid and wiped on a towel the fingers will be kept remarkably free from stain. A similar method, using weak nitric acid, has been recommended as a preventive of diamidophenol stain, although I have not had any experience of it. At any rate, I would mention these acid baths as free from injurious action upon the skin, which cannot be said of alkaline solutions, the constant use of which is probably as injurious as that of some of the developers of which complaint is made.

Patchy Silver Stains.—The patches of stain of brown color and greater or less depth which occur as the result of moist contact of printing papers containing soluble silver salts with the film of the negative may be removed by the bleaching-powder method, although with the risks attendant upon that process which I have already alluded to. Fortunately, there are several equally effective methods which are less open to objection, although they are slower in operation. One is simply to immerse the negative in an old hypo bath, covering the dish to prevent evaporation, and leaving the negative for a day or two, or perhaps a week, according to the depth of the stain. The action of the hypo is rendered more rapid by first well rubbing over the surface of the negative which is stained with a slightly abrasive preparation, such as Globe metal polish, or the cleaner and better material for this work lately put upon the market by the Vanguard Company as "Frictol." Usually even a very bad stain, when treated in this way, will be removed by immersion in the hypo for an hour or two; while the method is without liability to injure the negative as a whole, which is more than can be said of the process in which solution of cyanide mixed with that of iodine (the iodine-cyanide reducer) is employed.—*British Journal of Photography.*

Removing Pinholes

Clearly the larger the pinhole on the negative the more important is it to prevent its yielding a black spot in the print or enlargement. Also, if we have two equal-sized pinholes—one in a dense part (*e. g.*, the sky of the negative), printing, light, and the other in a thin, dark-printing shadow part, it is obvious that the first, giving a black spot amid light surroundings, will show more than the latter, giving a black spot amid a dark part of the picture. Therefore, in preparing a negative for enlarging, we have to consider not only the size of the pinhole but also where it comes in the picture.

For removing small spots (pinholes) in dark-printing parts we can generally do all that is needed with an ordinary retouching pencil. Larger spots will probably require touching-out with a little water-color mixed with gum-water. A piece of gum arabic the size of a pea, dissolved in half an egg-cupful of tepid water, is suitable. The color should, as far as possible, match the surrounding parts. This can generally be done with ivory or lampblack and possibly a touch of yellow ochre.

The color is to be applied by the point of a small-size, fine-point, camel-hair brush; the color mixture should be only just enough to dampen the brush tip, if too wet it will run to a circular mark and make matters worse.

For spots in a dense part of the negative the best tool is a broken needle. A sewing needle, say No. 6 or 8, is thrust well into the wooden part of a common penholder, the end of the needle, say ¼ inch, is broken off, and the stump ground to a flat end on a hard stone. The needle tip is just touched with color on the palette and then transferred to the spot on the negative, where it deposits a little round blob of pigment. In both charging and discharging the needle end the handle should be kept at right angles to both the palette and negative.

A little Indian ink rubbed up in gum-water is suitable where a dark dot is required. There is also a commercial preparation, called Photopake, which is very convenient for this purpose. One must be careful not to make the spot too dark for its neighborhood, or it will then print a spot too light.—*Amateur Photographer.*

Exposures with Moving Objects

In deciding the exposure to give to a moving object, in order that it may be sharply photographed, it is not sufficient to take into account the rate at which it is moving as a whole, but the rate at which any of its clearly visible details are moving. Thus a man may be walking at three miles an hour; but his feet are at times motionless; at others moving at six or eight miles an hour at the least. In rowing, the extremities of the oars when travelling forward move very much more rapidly than the boat, while, as is well-known, the top of the wheel of a

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vehicle moves at twice the speed of the vehicle itself.—*Photography.*

Quick Drying of Prints

A correspondent who is doing quick finishing complains that the production of the prints takes longer than he feels it should. Perhaps following the plan given us by a local worker will cut down this time.

With the print developed, the next thing is the fixing, and (if the print be the only one in a tray containing a fresh, but not too cold, fixing bath of a strength of one to four) two minutes should suffice. This can be proven by immersing a bit of undeveloped plate in the same bath for the same time, remembering that in the case of this latter the emulsion is not only somewhat thicker, but the fixing bath can only reach it from the front, while in the case of the paper the fixer can act through from the back as well.

The washing of the print should not require more than another two minutes, if there is a circulation of water and the print is suspended so that the heavier hypo solution can fall from the emulsion rather than through into the fiber of the paper.

Quick drying is merely a matter of removing as much water as possible before the process of evaporation is called into use. Pressure between blotters is the accepted means of removing surplus water, but some papers seem inclined to stick or else gather some lint from the surface of even the "lintless" blotters sold for the purpose. The best plan is to interpose a sheet of thin butter-muslin between the face of the print and the first blotter on that side. This done, and care taken to dry the prints in a current of air that is itself not damp, and the drying will be completed in a surprisingly short time.—Harrington's *Photographic Journal.*

Air-bells

Air-bells in photographic processes sometimes give rise to a great deal of trouble. In development, for example, an air-bell clinging to the surface of the plate for more than an instant will give rise to a circular mark on the negative which there is no practical means of removing. In squeegeeing prints to glass or ferrotype, air-bells between the print and the squeegeeing surface cause little spots on the prints, for which the only remedy is rewetting and squeegeeing again. Air-bells are also troublesome when making carbon transparencies on glass. The aeration of the water used is a prolific source of these annoying intruders, and, if they are at all persistent, it will save trouble in the long run if the water which is used at the stage when they arise is not employed just as it comes from the tap, but is first well boiled and then allowed to go cold without disturbance. Air-bells in development are most likely to arise when the plate is wetted with plain water before pouring on the developer. A remedy for air-bells when squeegeeing is to have plenty of water on the squeegeeing surface and to put down the print so that no air is enclosed.—*Photography.*

Mounting with a Copying Press

A copying press provides a ready means of mounting a print quite flat, and, if it is a squeegeed one with a glossy surface, of doing this without affecting the gloss injuriously. A method which has answered very well in my hands is to squeegee the prints before trimming them. When nearly dry, the back of each print is brushed over with a thick paste of dextrine; and when this is quite dry, and the print also, stripping and trimming are done. The mount is very slightly damped, the dry print laid down upon it, and at once the whole is screwed up tightly in the press, with a pad of paper above and below it. It is best to leave it in the press over night, and when it is taken out in the morning it will be found quite dry, flat, and adherent. Moreover, it will remain flat if a minimum of moisture was used in the damping.—*Photography.*

Printing upon Silk with the Salts of Silver and Iron

The making of prints upon silk or linen and upon several kinds of canvas usually involves the previous preparation of some salting compound and after sensitizing with a solution of nitrate of silver. The sensitizing of fabrics with platinum is an exception.

The process about to be described differs insofar that the material to be sensitized requires no previous salting or the employment of gelatin, gum, or starch; the preparation is ready for use just as soon as it has cooled down. The application to silk can be made with a good camel-hair brush or a piece of canton flannel tied over a two-inch-wide strip of glass, with the fluffy side outwards, or, if neither of these are at hand, a tuft of absorbent cotton can be used for the even distribution of the sensitizing material. One important condition is that, when the sensitizing of the silk has taken place, the drying should be hastened; rapid drying will cause the image to become more clear and brilliant. The sensitizing mixture is prepared as follows: The mixing must be made in a wide-mouthed, amber-colored glass bottle away from actinic light.

No. 1

Ammonio-citrate of iron (Green)	1 oz.
Distilled water	8 ozs.

No. 2

Citric acid (crystals)	1 oz.
Hot distilled water	4 ozs.

No. 3

Nitrate of silver	1 oz.
Hot distilled water	4 ozs.

Add No. 2 to No. 1, shake well, then add No. 3 and shake the bottle vigorously. As soon as the mixture is cold it will be ready for use.

To sensitize the silk, lay it down upon a clean sheet of celluloid or a clean sheet of glass and take care that no metal comes into contact with the liquid; then brush the surface of the silk over carefully with a camel-hair brush set in india rubber, or the canton flannel, as described. As soon as the surface is evenly coated, clip the top corners with a shellac varnished wooden

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photographic clip and suspend in a dry, warm room away from white light until quite dry. A number of pieces may be sensitized and, when dry, placed in a printing frame with a sheet of clean glass and kept under pressure until required for use.

Printing.—Place the negative in an ordinary printing frame. If the negative is a film, simply place a piece of clean glass in the recess of the frame, and place the film upon this. If it is desired to vignette the portrait, the arrangement must be made up and tested upon a piece of P. O. P. beforehand; in any case lay the prepared face of the silk down upon the negative, and expose in a good light until the image appears well in a good brown color.

As soon as the printing is complete the pieces must be well washed in clean cold water half a dozen times, or more, to extract all traces of the sensitizer. It may then be fixed in a weak solution of hyposulphite of soda, measuring 18 on the hydrometer. Fixing is usually complete in about 10 minutes. The silk must then be well washed in cold water half a dozen times, then in hot water; then rinsed well, dried and ironed out with an ordinary flatiron; if ironed upon both sides the image will be found to come up well, taking care to iron the face upon which the print has been made last. The print can be washed several times in warm water previous to ironing without fear of injury.

Silk of various colors can be used and arranged for framing, or made into pincushions, or bound with a suitable silk cord, and suspended upon the wall, or made into cushions. Silk stool tops can also be made in this way, and form not only handsome presents and souvenirs, but produce good articles for sale. Any photographer could increase his income by undertaking such work as this for many of his customers, or without receiving an order in the first instance, produce a number of such prints on speculation. In eight cases out of ten these prints would be purchased, when other orders would be sure to follow. Once recommended by these customers to their friends, other orders would be sure to follow. It would prove a good and novel means of advertising a business and bringing new customers for other photographic work. All such novelties are worth the attention of photographers because they advertise their business and bring the name of the photographer before a class of people that probably never heard his name before, or had hitherto seen the class of work that such a house produces. Novelties of this kind will oftentimes attract and bring to the notice of a considerable number of the public the kind of work they have been looking for, when the introduction of a trade card used by everyone would not possess any such attraction. From this stand-point alone this class of work will prove to be a good means of advertising.

It must be mentioned here that there are two kinds of ammonio-citrate of iron, the brown and the green. If the brown salt is used and the keeping qualities of the material are affected, the green variety possesses better keeping qualities.

The use of ammonio-citrate of iron as a photographic compound was first discovered by Sir John Herschel in 1845, and there have been very many photographic preparations made with it, particularly the blue-print paper which has become a daily article of trade.

The production of photographic prints in various forms has also been made with the compounds of nitrate of silver and the ammonio-citrate and ammonio-tartarate of iron. In all these preparations the resultant image is of a rich sepia or brown.

Although silk only has been mentioned in this article, linen can also be used. If linen is used the article or piece of fabric should be well washed with soap and water after the fixing and washing operations, previous to ironing. If the silk is submitted to the same operation no harm will accrue; the main point to be attended to in the use of the salts of silver and iron is to be sure that the fixing operation and thorough washing are carried out as perfectly as possible. If this is attended to there need be no fear of permanency in any of the prints so made.

Testing a Lens

As a rough-and-ready way of testing the definition and flatness of field of a lens I have found the following method very convenient: The lens is put on to the enlarging lantern, and used to project upon the screen an enlarged image of a test subject. The subject I use is a piece of very fine muslin, mounted up like a lantern slide between two pieces of glass. One can see at a glance how the definition differs between the center and the edges, while it is easy also to perceive the effect of astigmatism, etc. It will be seen that this method does not call for the exposure of a plate; while the large scale on which the picture is seen is another advantage. There is no real need to stick to muslin. In fact, it might be better to fog a plate and develop it until very dense, and then to rule lines through the opaque film with the point of a knife.—*Photography.*

Reduction by Redevelopment

The use of a bleaching solution and cautious re-development may be adopted as a reducing method successfully, particularly for negatives which are very hard in contrast. This old method of Eder is easily practised by using a mixture of bichromate and hydrochloric acid and re-developing slowly, say, with amidol containing 4 grs. of bromide per oz. If the development is conducted in a white porcelain dish, watched carefully, and stopped when the plate has apparently just regained its original density, it will be found, on removing the plate from the dish and looking through it, that it is very much thinner than it was originally, even though the image is blackened right through to the glass. If fixed at this stage the result may be too thin, and it is generally necessary to carry development a little farther. If reduction is insufficient it can be repeated, or if carried too far it can be remedied by intensification. No detail is lost in the process, and all gradations are preserved if slow development right through the film is ensured. A hard negative can easily be converted into a beautifully soft one without the

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slightest risk of damage, and this method of reduction is one of the greatest possible value.—*British Journal of Photography.*

Gum Tragacanth

Among the adhesives available for photographic mounting there is one which is little heard of—gum tragacanth. It takes the form of thick whitish flakes, curiously twisted, which on being placed in cold water swell to very many times their original size. Thirty grains of the gum may be soaked in an ounce of cold water and then dissolved by warmth and stirring to make a pure mountant, powerfully adhesive, and one that will not harm silver prints if used freshly made. If it is to be kept, some preservative should be added. An ounce of the gum in sixteen ounces of water with four or five drops of an alcoholic solution of thymol makes a good paste which will keep in working order for months.—*Photography.*

A Dark-room Reminder

When making up a solution from a written or printed formula, it is a good plan to write the entire formula on the label of the bottle. When this is done the formula is always at hand when a new solution has to be made. If the label is varnished with ordinary negative varnish it will last a long time.—*The Professional Photographer.*

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents each.

Film Cartridge. A. F. Sulzer. 1195746–7.
X-ray Plate. Arnold & Levy-Dorn. 1195432.
Repairing M. P. Film. E. M. Bendheim. 1195175.
M. P. target. W. F. Weeks. 1197567.
M. P. target. W. F. Weeks. 1197568.
Developing process. F. W. Norton. 1197533.
Recovering cellulose esters. G. W. Miles. 1196799.
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Container for photographs. C. W. Laurell. 1197041.
Range finder. C. M. Frost. 1196771.
Stereopticon slide holder. R. E. Bothwell. 1196924.
Objective mounting for microscopes. H. N. Ott. 1197391.
M. P. Apparatus. J. Roeder. 1196812.
Camera. C. Bornmann & E. C. Clark. 1197901.
Enlarging camera attachment. E. A. Van Doran. 1197780.
Film-splicer. J. Thaison. 1198168.
Kinetographic apparatus. H. W. Webb. 1197696.
Developing and printing box. J. Turek. 1198290.
Flash-light bag. G. A. Ley. 1198361.
Machine for developing M. P. Films. J. R. Grabert and P. J. Friedrichs. 1197734.
Mechanism for M. P. printing. A. F. Gall. 1197732.
Safety device for M. P. machines. B. Garros. 1198119.
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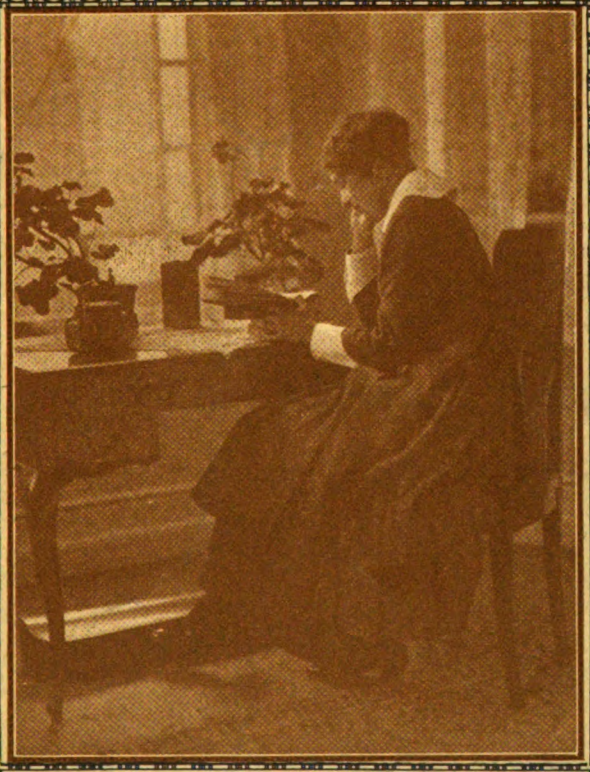
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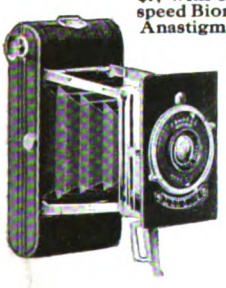
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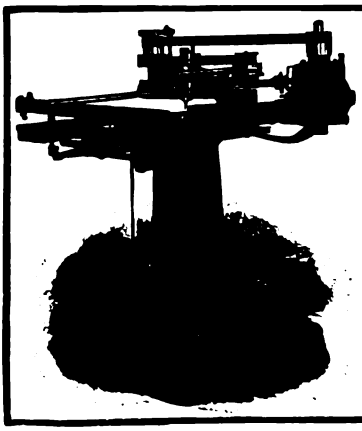


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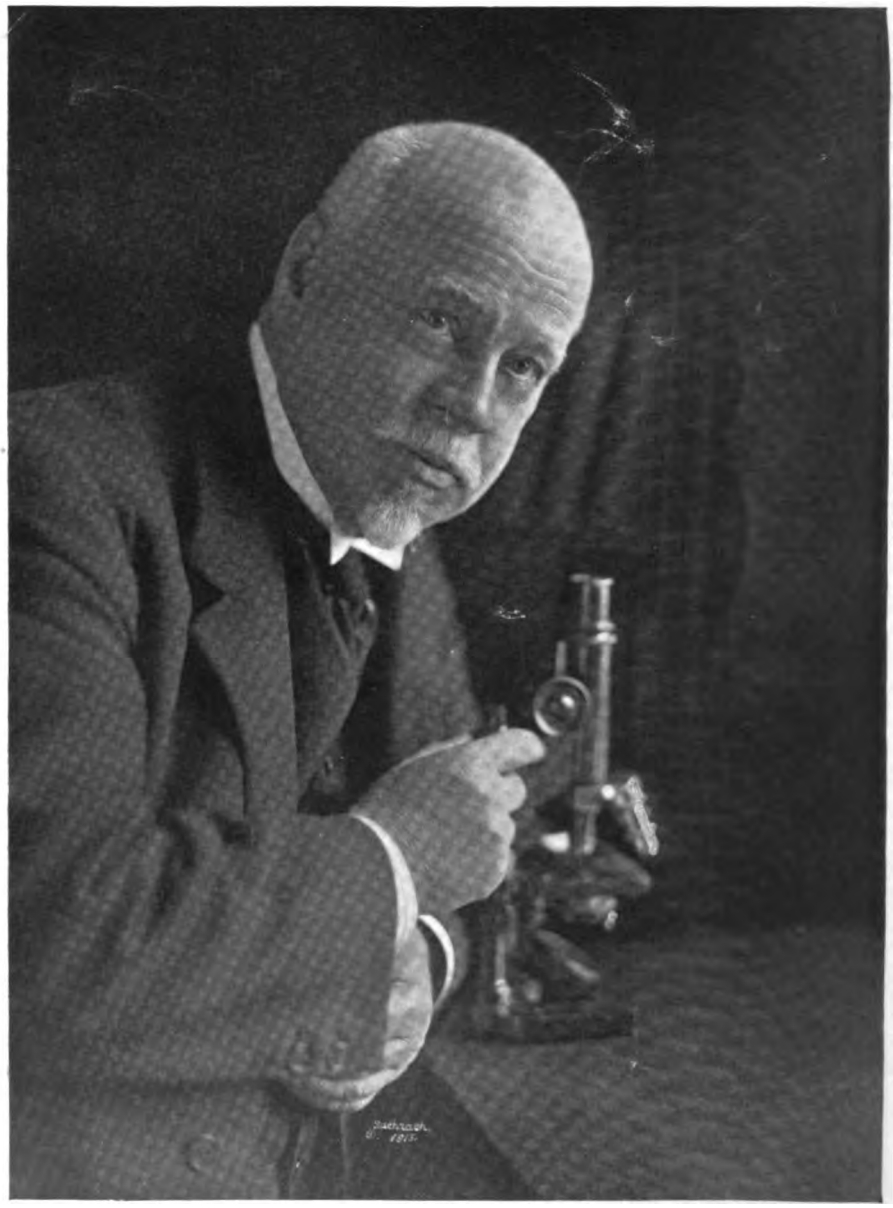
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HERE'S TO OUR READERS

MAY THEY RECEIVE THEIR SHARE OF THE PROSPERITY THAT IS COMING; MAY THEIR FAITH IN THEMSELVES, IN THEIR FELLOW PHOTOGRAPHERS AND IN THEIR BUSINESS GROW STRONG; AND MAY THEY OBTAIN AS MUCH PLEASURE AND INSPIRATION FROM READING THE PHOTOGRAPHIC JOURNAL OF AMERICA AS THE EDITORS DO FROM PROVIDING IT

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By THE BACHRACH STUDIOS
BALTIMORE, WASHINGTON
PHILADELPHIA, NEW YORK
BOSTON

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The
PHOTOGRAPHIC
· JOURNAL ·
· of AMERICA ·

VOLUME LIII DECEMBER, 1916 NUMBER 12

THE QUALIFICATIONS OF A PORTRAIT PHOTOGRAPHER

RECENTLY we chanced to refer to that valuable little handbook (now out of print) *Pictorial Effect in Photography*, by H. P. Robinson, the veteran photographer and pictorialist, and we find the chapter under the above heading so rich in suggestive ideas that we cannot do better than let it speak for itself. For it will well stand the test of careful reading. [ED. P. J. OF A.]

"Photography has been called every man's business. In the past the art has been a too-facile refuge for those who have failed in other walks in life. The brewer and baker and candlestick maker have found it an easier means of a narrow existence than the practice of the mechanical trades to which they had been brought up, and filled the spaces which would have been better occupied —for the credit of the art—by those who were properly educated for it. It may be said of photographers as Bryon said of critics:

'A man must serve his time to every trade
Save censure—critics all are ready-made.'

"But this state of things is improving, and the best places in the business of photography are being gradually filled up by those who have been properly educated and trained to it, just as other businesses are led up to by apprenticeship or articled pupilage; and to attempt to open a studio now without some such training would be to undertake a great responsibility.

"What, then, should be the qualification of a first-rate portrait photographer? Is it a knowledge of chemistry, optics, carpentry? Certainly not. The first consideration is that he should be an educated gentleman. Not that he need be educated according to the much-abused conventional or scholastic meaning of the word, which can only see education at the universities. What is wanted is correct language, easy manners, quick perception, and insight into human nature.

"To this must be added the ordinary knowledge which every educated person should possess, added to what might be called newspaper information, for

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daily use. He should be all things to all men, and ready to discourse with at least plausible knowledge on all ordinary subjects, and if he could make himself acquainted with a few erudite studies, or have a hobby of some scientific, naturalistic, or archæological character, it would be to his advantage. General education, then, should be the foundation on which our future superstructure should rest. Without it, or with only a little of it, our photographer may be a good photographer, and able to take a portrait technically excellent, but it would be by a rare chance if it were the best that could be done of the sitter; and in all arts and science—and, indeed, in all relations of life—it is better to eliminate chance, yet, at the same time being ready to take advantage of any happy opportunity that may occur. The Duke of Wellington said it was the general who made the fewest mistakes that won the battle. Of course there are positions in photography where the best is not called for, or expected, but I am now speaking of the aspirant to the highest position.

"The next qualification is a knowledge of art. Not merely the shallow acquaintance with it that is to be got from a few lessons in a drawing class or an art school—which, however, would be the best beginning—but the wider knowledge that embraces the history of art and a study of all the schools, from Cimabue down to the many varieties of the present time. Some of these latter are at least remarkable for their enthusiasm.

"But this as a digression. Art should grow up with other knowledge; the first dawn of it cannot come too early. It is difficult for a man who has not cared for it the first half of his life to say, 'Now I will begin to study art, to be enthusiastic about it, to teach it.' I only know of one instance in which great art came to a man in his mature years without previous study, and that man was Claude Gelleé, of Lorraine. To take an exception from our own art, Mrs. Cameron did not take up photography until late in life, and this she did without any training for art of any kind. Her portraits were full of artistic feeling, but as works of art and photography they were very immature. They were full of promise, but lacked fulfilment. Before her death she saw the defects of her earlier work, and was advancing to more photographic completeness.

"To return more directly to our subject, the future photgrapher, prepared as I have indicated, is now ready to study photography for professional purposes.

"There can be no doubt that a course of elementary chemistry would be of the greatest use to the budding portraitist, but it should be confined to the elements. I remain convinced, as I always have been convinced, that too much science is inimical to art.

"There are, of course, some minds great enough to hold the two, but the hard fact of science is apt to clash with the only half-understood feeling of art. There is a good deal that an artist does that he knows is right, but cannot easily explain; and any attempt to put it under the microscope and analyze it scientifically soon makes prose of the poetry, and an exhaustive study of exact science is apt to engender a turn for that analysis which is opposed to feeling. There is a good deal of fine poetry which the world enjoys that would not stand the test of the grammarian's scrutiny, and much artistic romance that would not bear the touch of the Ithuriel's spear of a scientific Mark Twain. I must not carry this argument too far, or it would be made into an excuse for not learning anything—there is always danger in extremes—and I may lay myself open to be misunderstood.

I have a great reverence for science, but think that the artist should take just as much as would be good for him, and no more.

"I know that this is not the opinion of those who usually decide upon what a photographer must learn, and that a student can get a certificate that he knows all about photography when he knows the complete chemistry of the operation short of the composition of the image; and, indeed, in strict technical truth, so he does, but he has only learned

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the technical application of his materials, and has yet to know how to put them to artistic use in the making of pictures; and the mischief is, that when students go for the advanced science of photography they sometimes get lost in it, and the result is that it often happens that learned chemical papers are read against each other by great scientists at photographic societies to prove or disprove a simple fact that a mere tyro could easily settle by a couple of experiments.

"It is to be hoped that if a great photographic institute should ever be founded, it will not be a mere chemical laboratory, but that students may be taught to put the art to use. Abstract science must be held in all respect, but the average photographer is a practical man, and wants to know how to make pictures."

LUXURY IN DARK-ROOM LIGHTING

RECENT investigations and experiments on safelights for dark-rooms, made by the Research Laboratory of the Eastman Kodak Co., have developed some interesting facts that will go far toward effecting great changes and improvements in the working conditions of dark-rooms, large and small. Four principles have been established, and under the improved conditions of work their application will produce, dark-room work can be considerably improved as to quality and reduced as to cost.

The term "dark-room" is a misnomer. It is obvious that a room where the work has to be carried on by the aid of a light, even though it be a very subdued one, cannot be dark. Our object is to get all the light possible consistent with the safety of the sensitive surfaces exposed to such light. While the eye has a wonderful range of adaptability to unusual light conditions, there are limits beyond which it cannot go, we must therefore seek conditions which give the greatest amount of comfort within the limits of safety.

The following four principles will be obvious upon consideration:

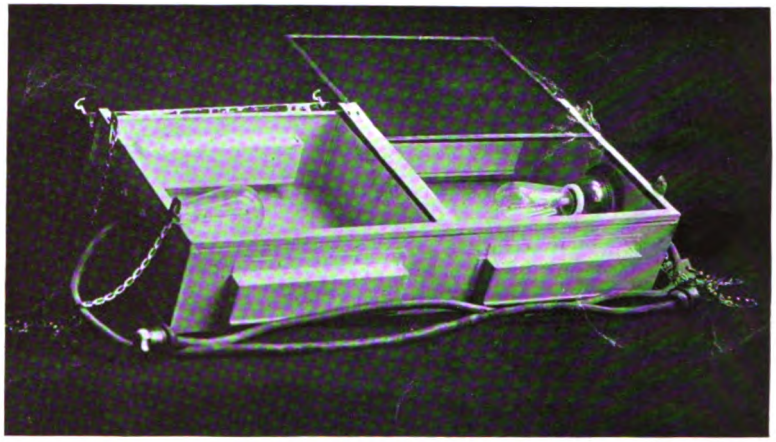
1. That we can have a much better general illumination than has hitherto been thought safe, the usual arrangement having been a comparatively bright light over the work with the rest of the room in almost total darkness. We can have, at least, as much general illumination in the room as we can have upon our plate, film or paper during development.

2. To enable the eye to make the best use of what light there is, it must not be made to look at a brighter surface than the material to be examined, and, especially, it must not be made to see a brightly lighted lamp. To keep the eye at its maximum sensitiveness it must be protected from all direct light.

3. The lighting must be arranged with a due regard to both the material used and to the sensitiveness of the eye; that is, it is not sufficient to select the color to which the photographic material is least sensitive, because it is possible that the eye will be too insensitive to work conveniently with it, and it may be better to select another color with which a weaker lamp must be used for safety, but toward which the eye is much more sensitive. It is, for instance, not often desirable to use a very deep red, because, although most materials are less sensitive to deep red than orange, yet the eye is so insensitive to deep red light that it is better to use a weaker light of orange color and of which the eye can make greater use.

4. If all white light is excluded from the dark-room, which is an absolutely essential preliminary, then the ceiling and walls should reflect light well, in order that all corners of the room may be well illuminated, and this will tend

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to ease in finding things when wanted and to the keeping of the whole room clean and tidy.

These four principles have been applied with marked success in manufacturing plants and can be equally effective in the smallest dark-room. In any discussion of dark-room lighting it would not be amiss to consider for a moment the remarkable adaptability of the eye to varying light conditions. The quick change from a brightly illuminated room to a room that is free from white light has a very decided effect upon our eyes, and even with the help of a dark-room lamp we are unable to see anything outside a very restricted area. In a few minutes, however, different objects in the room will begin to slowly emerge from the darkness, and in nine or ten minutes the eye will have so adapted itself to the new condition that we will be able to distinguish every object in the room, and the light that we thought, on first entering the room, would be entirely inadequate, will appear quite ample for our purpose. This gain in vision of the eye will continue for several hours, but at a very much reduced rate, the first seven to ten minutes being the most effective.

Now for our dark-room lighting. The general illumination of the room is best obtained from an indirect source of light, and for this purpose we suspend, some twelve or fourteen inches from the ceiling, a shallow box about eight by ten inches, ventilated at the sides, in which the electric lamp is placed. The lid is an interchangeable safelight throwing the light directly on to the ceiling, which is painted a clear white; the reflected light then evenly illuminates every corner of the room without a trace of white light to bother the eye or fog a sensitive surface.

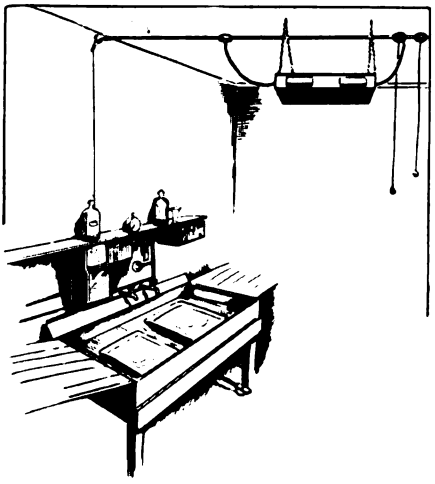
This ceiling light, providing a general illumination only, we will need a special lamp over or near the sink for developing. This lamp should be placed below the level of the eyes and reflect the light downward, a Wratten safelight lamp fastened horizontally above the sink being very convenient. There is only one disadvantage to this position of the lamp, in that the negative cannot conveniently be judged by looking through it at the light. It is better not to judge negatives in this way, as examination of a negative in front of a lamp rarely does it any good, but, if the worker cannot get along without it, then the examining lamp, next to be described, may be fitted with a safelight and used for this purpose.

This examining lamp will be placed on the wall facing the worker, immediately over the sink. A Wratten dark-room lamp fitted with a safelight may be conveniently used. The use of this lamp for the examination of the finished negatives, using a sheet of flashed opal, enables the worker to hold his negative from the fixing bath so that the drips fall into the sink and not on to the floor, as they are sure to do if he has to move

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over to a white light elsewhere in the room. An added convenience is the arrangement of a foot control so placed that it will not be trodden upon by accident yet is easily found when wanted.

With our light sources conveniently located we now need the proper safelights for our purposes. The Wratten series of safelights provides an ample selection for all purposes. It comprises



series 00, a yellow light for gaslight papers; series 0, bright orange for bromide paper and lantern slides; series 1, orange safelight for plates that are not color sensitive; series 2, safelight for orthochromatic plates sensitive to green but not red; series 3, green safelight for use with red sensitive panchromatic plates, and series 4, bright green safelight for use with ordinary plates for those who cannot use a red light—not safe for orthochromatic plates. As a general rule the ceiling light may with advantage be considerably brighter than the developing and examining lights. For general work a series 2 for the developing lamp and a series 1, in the ceiling light, using twenty-five watt Tungsten lamps for both purposes. It is very convenient—and the height of dark-room luxury—to have in stock a number of safelights according to the different work to be done. It is also extremely convenient for the ceiling lamps to be double, arranging one side for use with paper and the other for plates and film. A good arrangement will be to have series 1 and series 00 safelights in the ceiling lamp and series 2 and series 00 safelights over the sink, the first two being fitted in the double ceiling lamp, while the sink lamp being so much more conveniently reached, the safelights can be changed according to the class of work to be done. If a worker finds a red light uncomfortable to work with, then the general illumination of the room can be made with a series 4 safelight, which is bright green. This is not to be recommended for the developing light for film, unless great care is taken and only a very weak illumination be used.

For bromide paper the series 00 is not safe, the series 0 will give ample light with safety, but even with bromide paper the 00 ceiling light may be retained. For panchromatic plates a series 3 safelight is, of course, indispensable. This light on first appearance would seem to be altogether too dim for any practical purpose, and it would be so but for the remarkable adaptability of the eye.

A BADLY stained negative can sometimes be saved by bleaching in bichromate of potassium, 15 gr.; hydrochloric acid, 5 minims; bromide of potassium, 5 gr.; water, 1 oz. Wash and redevelop in clean developer.

A GOOD cold varnish for negatives is: Sandarac, 3¼ ozs.; benzene, 14 ozs.; acetone, 14 ozs.; absolute alcohol, 7 ozs. Warm the solvents slightly in a water bath when dissolving the sandarac, filter, and carefully cork.

WITH the retouching knife many imperfections can be erased, but to accomplish this successfully much practice is required. Obtrusive high-lights can be removed, a spotty background simplified; ears that protrude a little too much, or are too large, can be reduced, etc.

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PHOTOGRAPHY IN THE MAKING

A Review of an Exhibition of Photography Held under the Auspices of the American Institute of Graphic Arts in the Galleries of the National Arts Club, New York, October 4 to November 10, 1916

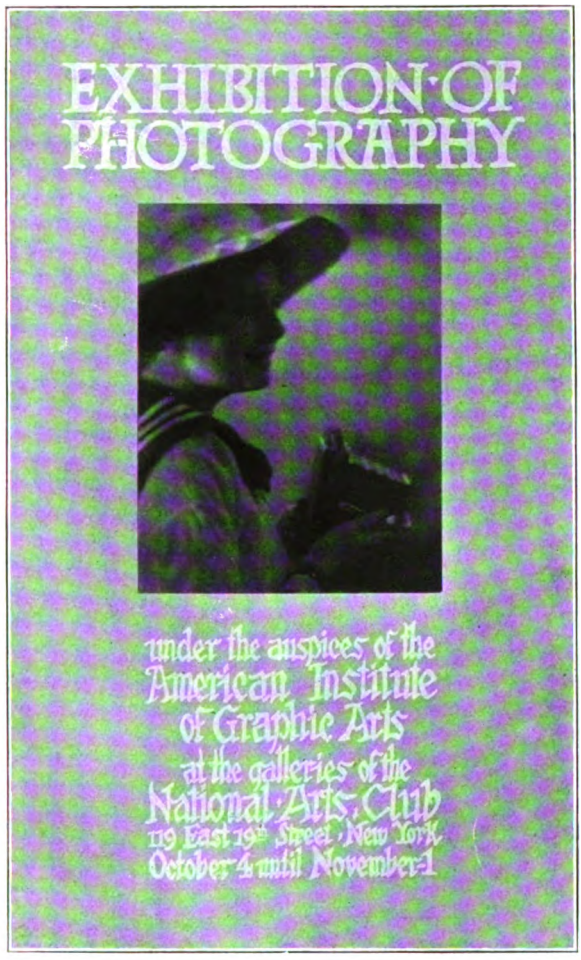
THIS exhibition was far more comprehensive in scope than any other ever held by photographers. It was the first time that an effort had been made to assemble in one gallery at the same time a series of items that would show the historical development of photography both from the artistic and utilitarian points of view, although several exhibitions have been held in this country to "show the progress of *art* in photography." Considering the tremendous scope of the thing if it had been possible to carry out the idea to completion, and the serious limitations imposed on the committees in charge by the war on the one hand and by a lack of cooperation in certain quarters on the other, it is not surprising that there were some disappointments, and the promoters are to be heartily congratulated on being able to make so interesting and instructive a show as they did.

The most significant thing about it was that it was not, like so many exhibitions, promoted and supported by a few enthusiasts who wished to present their work to the public, but was given under the auspices of the American Institute of Graphic Arts, who have in this way given public recognition to photography as a means of expression, virtually including it, that is, among the graphic arts, a place for which it has for many years been struggling. In its "Foreword" to the catalog the Exhibition Committee states that "the development of photography has been so significant and of so great moment to public consideration that the American Institute of Graphic Arts now presents under its auspices an exhibition at which may be seen the progress of photography from its discovery in 1839 to the present day." It is in this somewhat tardy but nevertheless sincere acknowledgement of the fact that photography has made a real contribution to the field of art that its true significance lies. It is, in fact, in itself, another step in the progress of photography as an art, and a most encouraging sign of the times.

So far as the modern work shown is concerned the exhibition did not differ materially from any of the other important photographic exhibitions in recent years. There was very little that was new. It was not to be expected that there would be, for it was not the intention of the American Institute of Graphic Arts or of the exhibitors themselves to present new work. George Seeley showed a still life that has not been shown before in this country so far as we can recall. Clarence White, Mrs. Kasebier, Baron De Meyer, Alvin Langdon Coburn, W. B. Dyer, Karl Struss, Paul Anderson, W. E. Macnaughtan, all presented familiar things—some of them so fine that it is doubtful whether they will ever be surpassed in their respective printing mediums.

The Foreword further states that "the exhibits show the successive stages of development through which Photography passed in many periods." In a broad sense, and as a statement of intention, that is true. But anyone who has followed the movement for a number of years cannot help being conscious of some serious gaps. They were almost certainly not intentional, and were no doubt due to conditions beyond the control of the committees, but if you have advertised to show the various steps in the progress of any movement the public naturally is justified in expecting to see all the steps or to have the omitted ones accounted for. In this instance, so far as the public, who are innocent of any special knowledge of the subject, is concerned, the exhibition is supposedly complete. But such is by no means the case. For example, no exhibition of the progress of photography would be complete without the various pieces of apparatus that have made the whole thing possible. Two or three interesting pieces were, in

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fact, shown. For instance, a daguerreotype camera and a developing box used in the making of daguerreotypes were among the items loaned by the Chandler Museum of Columbia University, and the Eastman Company showed photographs of a daguerreotype camera and other pieces of daguerreotype apparatus. Many other objects of interest could have been displayed in a very small space, and most of them could have been collected right in New York City.

Again, we must confess a disappointment in not seeing on the walls prints by a considerable number of workers who have been for years identified with the progress of Art in Photography, but who were not represented. This we know to be not altogether the fault of the committees in charge. We understand that some who were invited to contribute prints did not for one reason or another do so, and since the exhibition purported to be a summary of the progress of photography the absence of their work is distinctly felt. No summary of progress would be complete without contributions from a number of foreign workers whose names are household words among advanced amateurs, yet there were only three foreign contributors—two from Canada and one from London (Alvin Langdon Coburn). The war is probably largely responsible for this—but can an exhibition in fairness be called a summary of progress when many of the leading workers of the world, each of whose styles are distinctive and original, are omitted?

The catalog shows 245 prints hung, by 67 exhibitors, not including special exhibits like autochromes, daguerreotypes, and the like. As this was designed as in a sense an educational exhibition it would have been the proper thing to note in the catalog after the titles the nature of the printing medium, for the benefit of the large majority who do not know a "gum" from a platinum, or an oil print from a bromide enlargement. If this had been done, as it was in the catalog of the Albright exhibition in Buffalo in 1910, comparisons could have been made—even if some were odious. Or the exhibition might have been grouped in such a way as to present graphically the distinctive methods, or the historical sequence. The hanging was done with an eye to beauty of arrangement and not to instruction, and from that point of view was splendidly done.

Just as the exhibition itself is at least a partial summary of progress in the concrete, so this would be a good occasion to summarize it in the abstract, but that would be impossible in so limited space. Some of the exhibitors have been working on the problems of photography as a means of expression for over thirty years—are now veterans in the art. Others are either pupils or at least beginners following in the footsteps of the pioneers. Few of them show as yet any great seeing power—they have caught the trick and are at least perpetuating the types.

The works of Mrs. Kasebier, Baron DeMeyer, George Seeley, Clarence White, Alvin Langdon Coburn, Paul Anderson, Edward R. Dickson, Alice Boughton, W. B. Dyer, Arnold Genthe, Karl Struss, W. H. Porterfield, Dr. Ruzicka, are so familiar to all enthusiasts in photography that it is only necessary to mention their titles. Mrs. Kasebier's splendid "Red Man," a gum-platinum; "The Swing," a platinum; "Portrait of Rodin," a gum-platinum; "Portrait—Mother and Child," a gum; "The Pines," a platinum; "Yoked and Muzzled—Paralleled," a gum, are among the fifteen of her prints presented. No one could possibly show more absolute independence of tradition or of formulæ. If ever that elusive autographic quality that critics so insist upon as necessary to real works of art could be found in a photograph it can be found in her prints. If any proof were required of the power of the camera to express personality Mrs. Kasebier's work would be enough. Baron DeMeyer sent eleven, among which were three still life studies—"China and Roses," "Water Lilies," and "Glass and Fruit"; a portrait, "Mrs. J. Brown Potter;" "Study of an Applewoman;" "Marchesa Casati;" and one landscape, "On the Bosphorus." Mr. Seeley's group was characteristic—"Maiden with Sphere," "Maiden with Crystal," "Winter Landscape," "The Oak Branch," "The Artist" and a Still Life.

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Clarence White's group of twelve prints presented for the most part his earlier experiments, and as such in a way illustrated the beginnings of pictorial work in America. "Child Reading," "Still Life," "Happiness," "Confidences," "The Reader," "Directors, Hagerstown Bank," "The Rose," "The Late George Borup," each print represents a stage in Mr. White's development and shows the attitude of mind of the confirmed experimenter seeking ever new fields to explore. You cannot point to any one print of his and say, "That is characteristic of White," although there are many of his prints about which it could be said, "No one but White could have made that." It is different with Coburn, just as it is with Seeley. Neither of these men ever needs sign a print so far as identification of the author is concerned, no matter what the subject or the printing medium. Mr. Coburn exhibits here four of his Great West series—"In the High Sierras," "From the Mystic Spring's Trail," "From the Canyon Rim," and "Giant Palms;" and there are four of his city views—"Singer Building," "The Gargoyles," "St. Paul's, London," and "Greyfriars Churchyard, Edinburgh."

Of Mr. Edward R. Dickson's seven prints one is new—"Under the Elevated," a charming arrangement of spots of sunlight and shadow cast upon the street from an elevated railroad structure. Among the others are "The Columns—Columbia University," "Industries," "Design in Nature" (one of fascinating series), and "The Swimmers."

Paul L. Anderson shows "Pennsylvania Station," "The Boat Landing," "Queensborough Bridge," "Approach to Queensborough Bridge," and "Shadows and Drifted Snow."

Special mention must be made of the group of bromoil prints by Dr. A. D. Chaffee. Dr. Chaffee *sees* things, to begin with, and his technic is decisive and sure. It is a question whether there is a better oil printer in America.

There were several special exhibits that contributed much to the interest of the exhibition. The Chandler collection which was arranged in chronological order and carefully labeled with descriptive notes, in itself showed practically a complete summary of the development of photography on the mechanical side, that is, of photography as a reproductive process. It started with daguerreotypes, including a modern copy of the first known photograph of the human face, and continued with Talbotypes, Ambrotypes, Woodburytypes, solar prints, silver contact prints on albumen paper, artotypes, autotypes, heliotypes, photo-engravings, photo-lithographs, photo-electrotypes, photo-zincographs, chromo-typogravures, photogravures, rotogravures, and platinum prints.

The Eastman Company's exhibit also showed the historical sequence of events in the development of photographic printing mediums from the daguerreotype to the Artura print, and was exceedingly interesting and notable.

Another special exhibit was composed of photographs by Brady, the Civil War photographer, and photographs of Lincoln by Gardner and by Walker of Washington, D. C., in 1848–1865.

Three original prints by Julia Margaret Cameron (England, 1815–1879), were also shown; four original prints by D. O. Hill; and two framed photographs by H. P. Robinson (England, 1830–1901).

Examples of modern photographic printing processes formed another special exhibit—platinum, hand-coated platinum, multiple platinum (hand-coated), gum, gum-platinum, oil, bromoil, oil-transfer, and Artatone. Such an exhibit could have been extended almost indefinitely—in fact it is a pity that the whole exhibition could not have been hung in a way to illustrate the separate processes and contrast the different workers' handling of the mediums.

On the opening night informal talks were given to the members present on "The History of Photography" by Prof. C. F. Chandler of Columbia University; "Modern Portrait Photography," by Pirie Macdonald; "Color Photography," by Dr. Arnold Genthe; and "Motion Picture Photography," by Mr. M. W. Palmer of the Biograph Company. A motion picture showing the processes in the making of a half-tone engraving completed this interesting program.

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Autochromes were shown by Dr. Arnold Genthe and Henrietta Hudson; and Prof. F. E. Ives of Philadelphia showed a group of pictures in color done by the Hess-Ives process. Fred Wappler, of New York, exhibited some *x*-ray photographs.

If there were space it would be interesting in this connection to speculate on what the developments of the future will be. Is there any form of lighting, indoors or outdoors, or of composition, or of printing medium, that has not been tried or utilized in modern pictorial work? Can there be any new way of seeing anything? Can there be anything new to see? May we expect developments along the line of color photography? Perhaps; but it is doubtful in the mind of many whether after all photography is not first and always a monochrome art. The Hess-Ives process seems at present to offer great possibilities—any number of duplicates can be made, they may be viewed either by transmitted or reflected light, and accurate color rendering is possible (though not inevitable by any means). But judging from the examples shown in this exhibition it seems impossible to escape the appearance of something artificial, machine-made, lacking absolutely the autographic quality. Any color process thus far produced is better for purposes of utility (within limits) than of picture-making, provided the worker has skill enough to get accurate color renderings. Dr. Arnold Genthe, who shows a group of autochromes, in his talk on that subject to members on the opening night of the exhibition, declared that after all the greatest value of color work lies not in the picture produced, but in the training the production of it gives in observing color. And the observation of color is as important in any monochrome art as it is in painting—a truth not suspected by many photographers.

THE MERITS OF SEPARATE TONING AND FIXING

THE treatment of a silver print after it has been washed, so as to free it from nearly the whole of the free nitrate of silver, has often been, and still is, a subject of controversy as to the best method of toning, as it is termed, which simply means the change of color from the red or purple red of a direct-made print to a color more agreeable, and in keeping with the taste of those who produce them. To M. Lizeau, a Frenchman, belongs the honor of introducing the toning of photographic pictures, being used for the first time upon the Daguerreotype, and known as the gilding process—this selfsame process being afterward applied to the toning of photographic prints made upon *plain* salted paper, previous to the introduction of albumenized paper.

The first gold toning solutions were in reality combined toning and fixing preparations—that used for the Daguerreotype being a weak solution of hyposulphite of gold, while the toning bath that was universally used when the use of plain paper and albumenized paper became the practice was one of an exceptional composition. Although this solution will tone and fix a plain silver print, and give a beautiful blue-black tone, the whites of the picture soon suffer and an unusual bronzed tint of sulphurization sets in and produces a yellowness all over the print.

It may interest many readers to know the exact composition of the earliest toning bath that was used for commercial purposes. Here it is:

Chloride of gold	1 gr.
Distilled water	1 oz.
Hyposulphite of soda . .	1 oz.
Distilled water	2 oz.
Nitrate of silver	4 gr.

This mixture had to stand for twenty-four hours before it could be used for

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toning. What purpose the introduction of nitrate of silver served is not at all clear.

It was soon discovered that the above toning solution was defective, and that the prints so toned could not be relied upon to be permanent. Then came the toning method that lasted in use for many years, and is still used by many photographers, by toning the print in a gold solution, restrained by the introduction of acetate of soda and bicarbonate of soda, making up the toning solution in a very weak condition, and allowing the gold to replace the organic compound of silver, and so produce an image that contained none of the sulphurized silver compounds that were produced by the original toner, the fixing of the print being carried out *after* the toning operation.

This method of toning was first introduced in the early sixties and has continued ever since with the majority of photographers. The other toner, known as the borax toning bath, was first introduced by the late Mr. Werge, of Berners Street, London. This bath also is an excellent toner. The solution can be used for toning the moment it is mixed.

While the introduction of a solution of carbonate of soda or bicarbonate is used by many, the fact is that a gold toning bath *must* be of a slightly alkaline nature to enable the gold to replace the silver, otherwise the operation is not one of toning but one of bleaching, the prints becoming very thin and poor in color, instead of rich and bold. When toning a silver print with platinum salts in place of gold the bath must be of an *acid* nature or the toning operation does not take place. This proves that there is a great difference in the character of these precious metals. Any tendency to neutrality or alkalinity of a platinum toning bath will produce upon a silver print a similar effect to a solution of gold in an *acid* condition, the print being thin, poor, and weak.

One of the modern combined toning and fixing solutions is given here. This bath has been used by the amateur and professional alike, and for what purpose? Just to save a little time, and only a little time. The permanent character of the prints invariably suffers; after toning, the prints fade in the course of a few months, and sometimes in a few weeks. The following formula gives the component parts of a combined toning and fixing bath that has been made up and sold for the purpose of toning and fixing. Where permanency is of no consequence it answers the purpose:

Water (temperature, 180° to 200° F.)	1 gal.
Hyposulphite of soda	2 lbs.
Acetate of lead	¾ oz.
Alum (white)	¾ oz.
Citric acid	½ oz.
Sulphocyanide of ammonium	2 oz.
Chloride of gold	15 gr.

The gold chloride in solution is added last; the mixture must be allowed to stand for twenty-fours hours; siphon off the clear liquid, it is then ready for use. Prints toned in this mixture, no matter whether they are washed previously or not, present a very good color, but they are never so brilliant as prints toned in a separate toning bath. All that the combined bath saves is the washing of the prints previous to toning and the time consumed in separate fixing. The use of the combined toning and fixing bath many times over gives no advantage over the separate plan, because the gold solution in the latter case can also be used many times over with advantage.

The two following toning formulæ will give the richest tones upon any kind of silver prints that it is possible to obtain:

No. 1

Water	40 oz.
Sodium bicarbonate	40 gr.
Sodium acetate	60 gr.
Chloride of gold	3 gr.

This toning solution works best after being mixed six to twelve hours. It gives beautiful rich tones, any color from sepia to blue-black.

No. 2

Chloride of gold	3 gr.
Water	40 oz.
Saturated solution of borax	2 oz.

This bath can be used as soon as mixed. The prints are washed well in five or six changes of water previous to toning. After toning they are washed again in three changes of water, then

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fixed for ten minutes in a solution of hyposulphite of soda, indicating *eighteen* on the hydrometer. After fixing, the prints must be well washed by changing them from tray to tray in fresh water, or allowed to rinse for half an hour in running water, to complete the operation, when the prints will be ready for drying and trimming, or mounting while wet.

The operation of separate toning and fixing may appear to some a somewhat long operation, but it is not so: The handling of the prints takes but a short time, and there is one great point to be considered, and that is, when the toning has been carried out separately, and the after-fixing adopted, the lasting of the print against fading can be depended upon. The writer has prints in his possession today that were made thirty-three years ago, toned in the acetate gold toning bath, that are in quite as good condition as the day they were made, showing no signs of fading at all. The paper used was albumen paper, sensitized upon a fifty grain bath of nitrate of silver, the prints being mounted with a preservative paste.

When prints made upon the modern gelatin printing-out paper are toned in a combined bath there is another action apparently set up besides fading: Often there is a wavy and irregular color distributed all over the surface; while some parts of the picture may be good in color there are many patches of a greenish-yellow color that mar the whole effect of the picture. When it is taken into account that large numbers of prints made from beautiful negatives, and mounted upon good and expensive mounts, are wasted through the use of a toning solution that has no advantage whatever but the saving of a little time, it should be convincing to everyone who has practised this kind of toning that he should abandon it and devote the extra time and energy to the more certain and wise method of separate toning and fixing.

The only compound toning bath known to be reliable is the one for the toning and fixing at the same time prints made upon porcelain or opal glass, this being intended to give sepia and brown tones only, of a very even quality throughout. For paper prints it does not appear to be suitable, the color in this case not being of such a pleasing character. Warm water should be employed in the making of this toner, which is ready for use as soon as cold.

Water	48 oz.
Phosphate of soda	120 gr.
Sulphocyanide of ammonia	200 gr.
Hyposulphite of soda	4½ oz.

Allow the above to become completely dissolved then add—

Chloride of gold	8 gr.
Water	8 oz.

The use of this bath for porcelains leaves nothing to be desired for sepia and brown. The printed plate is washed well before being placed into this bath, then toned for a period of five to ten minutes. After washing two or three times the plate is placed into a 10 per cent. alum solution for four or five minutes, then well washed and dried.

An exceptional use for the combined toning solution first given is the re-toning of paper prints. If a print has been toned by the separate toning and fixing plan, such prints can be retoned to such a color that is not attainable by any other process. All that is necessary is to place the print, after it has been toned, fixed, and dried, directly into the combined toning and fixing solution. In a very short time the print will assume a color of a very rich purple-black tint. The print must then be placed into clear water and well washed under the faucet and dried. The colors that are to be obtained by this means are of such a variety that cannot be obtained by any known previous toning. It has been supposed by very many photographers that a print after being toned and fixed in the usual way cannot be toned again. It can be retoned, and with the combined toning and fixing bath it is easily accomplished. Retoning can also be carried out with the usual toning solutions, but the quantity of gold must be increased, and also the alkalinity by the addition of more borax solution or carbonate of soda.

The bleaching of overprinted prints can be easily accomplished with the separate toning solution, by flooding

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the surface of the print during toning with a small quantity of the chloride of gold solution (one grain to the ounce of water), allowing the gold solution to enter the toning bath. This dodge is often practised by those who thoroughly understand the handling of gold toning solutions. These hints may prove to be new to many of those who read them, and also a source of profit by introducing new colors to their prints.

In the use of the combined toning bath the change of color may be due to the transformation of a part of the silver image into silver sulphide; but when the stronger gold solution is employed as in the separate toning method, such action as the above does not take place, there simply appears to be a further deposit of gold, and as all the unacted-upon silver salts have been dissolved out of the paper by the hyposulphite of soda fixing bath there will be nothing gained by refixing; all that is necessary after retoning in either case is to wash the prints well, dry, and mount as usual.

ON SITTING POSITIONS[1]

By SADAKICHI HARTMANN

(SIDNEY ALLAN)

IT is not a mere coincidence that James McNeil Whistler painted his two masterpieces of portraiture, his "Mother," at the Luxemburg Galleries, and his "Carlyle," which we reproduce, as profile views. A seated figure is generally a jumble of lines. Treated in profile, the lines become simplified. Only one arm is seen in its entire length, and the lines of the legs can be more easily managed.

The great difficulty of depicting a man seated is caused by his legs. It is almost impossible to make these two pieces of stovepiping fall into graceful lines. And comparatively few sitters take enough exercise to keep their limbs supple enough to assist the operator by placing them in graceful positions. When a man sits in a chair, after a time he feels inclined to rest one leg by crossing it over the other. This helps considerably to get rid of the two parallel lines formed by the lower ends of the trousers. The two most natural ways of resting one leg on the other are shown in the diagram. *A* is, no doubt, a graceful position, but it is only suited to a certain type of "young and stylish" men, and does not lend itself particularly well to photographic portraiture. The lower part of the picture is generally dark, and this (unless very skilfully handled) will result in one leg, the one touching the floor, being almost lost in tonal darkness, while the other, by the nature of its position, will receive an undue share of light, and easily look out of proportion. *B* is by far the most common pose. Everybody assumes it. Some photographers think it objectionable, because it often makes such a long straight line from *X* to *X*. By getting the sitter to cross the outer leg over the nearer one (*C*), this line is got rid of; but this position, on account of its foreshortenings, is much more difficult to take. And, after all, the other can be managed successfully, as we see in the portrait of Whitelaw Reid.

To return to the full profile view. I would like to draw special attention to the "Carlyle." It is a most formidable object lesson. No better picture could grace the walls of any studio. The majority of photographers have fallen into the error of looking at the Old Masters for inspiration. A few pictures of Whistler, Alexander, Sargent, Zorn, Lenbach, Bonnat, contain more instruc-

[1] From Composition in Portraiture.

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tive qualities for the up-to-date photographer than all the Old Masters that can be found in European galleries.

Notice how sure, simple, and well-balanced the composition of the Carlyle is; how all the details of dress have been eliminated; how the outline has been accentuated against the background; how naturally the figure is seated, and



CARLYLE
BY WHISTLER

how well it has been placed in space. There is an atmosphere around the figure. One feels that this person is seated in a room. How few photographs can carry out the atmospheric effect! (The gloved hand resting on the cane is a trifle too dark, but that is only the case in the reproduction; in the original the color value of the glove tells beautifully.)

A seated person in profile looks contemplative, unconcerned, isolated, as it were. Looking straight ahead, the person seems to live in a world by himself. The aspect is a trifle stern. But, for a serious portrait of an old man or woman, or a personality of prominence, no better viewpoint can be found. It is simple, dignified, and decorative at the same time.

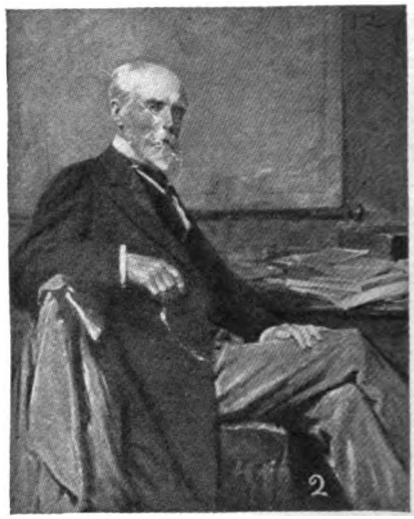
The other views have a more picturesque tendency. In Fig. 2 we have the body in profile and the face in three-quarter. This view is one of the most satisfactory ones. The simplicity in the handling of the body is preserved, while the face turned toward us has a more sympathetic, cheerful expression.

Fig. 1 gives us a full three-quarter view. It has the charm of being more pictorial. The lines are softer and have more swing to them. It is the ideal position for women. The lines of the skirts flow more gracefully (particularly so if the gown has a train) in this position than any other. It affords a wonderful opportunity for diagonal line arrangement.

Figs. 3, 5, and the famous portrait of Whistler, by Boldini, show us the full front view. The simple full front view, the legs straight down, as exemplified by the MacMonnies portrait (Fig. 3), is always a trifle bulky and awkward. There is too much symmetry and too many parallel lines. This can only be improved upon by special lighting, as we see in Fig. 5 (by the by, not quite a full front view), or by placing the arms in such a way (viz., the same portrait) as to break the symmetry. If the arm of this lady were hanging down, as in the MacMonnies portrait, the composition would suffer and the portrait would look rather commonplace. A still more effective way than the mere shifting of the arms is to give the entire body a peculiar twist or swing. This Boldini accomplished in his portrait of Whistler. This portrait competes in excellence with that of Whistler's "Carlyle." It is picturesque in the extreme, almost too much so. One thing is sure: If you ever succeed in placing a sitter in a similar position, you will have one of the most successful pictures you ever made. But I fear you will have to wait until a person comes to your studio and assumes such a position naturally by his or her own free will. One cannot force people to look picturesque. It would prove a dire failure. The Boldini portrait, however, shows that the general awkwardness of the full front view can be overcome, and to the photographer who sees and thinks it will suggest an endless variety of new poses. The difference between the Boldini and Mac-

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1. VAN BUSEN
BY LEPSIUS

4. "SILVER MIRROR"
BY ROBERTSON

2. HON. WHITELAW REID
BY REID

3. PORTRAIT
BY MAC MONNIES

5. MLLE. CREMER
BY WAUTERS

Monnies portraits is too startling to be overlooked. Both are natural, but one is prosaic, ordinary, while the other one is interesting and full of animation and life.

There is still another view which in itself is more picturesque than any other. It is the three-quarter back view, with the face looking over the shoulder. It is specially suitable for women, and always sure of a pictorial effect.

Before I conclude this chapter, I would like to talk a few minutes about the most necessary adjunct of all sitting positions, namely, the chair. It is the real stumbling block in the majority of unsuccessful portraits of this kind, and there are few photographers who could not tell their own tale of woe about this most obtrusive and unwieldy piece of furniture. In appalling distinctness, its arms and legs appear always where they are least wanted. One might almost suppose that an ordinary piano stool would prove the best vehicle to overcome all these difficulties. But, after all, there must be some visible support to a seated person (depicted in full length), and it would be impossible to manage the backs and arms of the sitters without the backs and arms of the chairs. So there you are. The chair is a necessary evil. But I really do not

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WHISTLER
BY BOLDINI

understand why those huge curved monstrosities of studio armchairs, with a back twice as high as that of any chair in ordinary use, have ever come in vogue. They mean death to any portrait with artistic pretensions, and the photographers who patronize them are in misery indeed—and by their own doings.

My advice is to show the chair as much in profile as possible, as in the Whistler and Boldini portrait. It does away with the confusing perspective of the legs. Of course, you can subdue it, as in Fig. 1, or disguise it with drapery, as in Fig. 2. But one means extra work, and the other somehow never looks right. People don't drape their chairs in ordinary life; why, then, should it be done in portraiture?

Much trouble could be avoided by selecting simple, graceful, fashionable chairs, such as are used in everyday life. Their lines must mean something in the general composition, and as much care should be bestowed upon their arrangement as on the arms and hands and legs of the sitters. And why must it always be a chair? A settee, a sofa, will yield in many instances much finer opportunities than the stiff and awkward studio chairs.

SIMPLE SPOTTING, FINISHING AND COLORING OF PRINTS

TO the person who has never tried to do it, the spotting and finishing of a photograph, "touching it up" as the public generally call it, seems a very simple matter, and it is only after a few attempts, which usually result in the added work being the first thing to arrest the eye, that the beginner realizes that considerable delicacy of touch, together with not a little skill is essential to success. This is especially the case when glossy prints have to be worked upon, for not only must the pigment exactly match the color of the image, but sufficient gum must be mixed with it to ensure its drying with a surface approximately similar to that of the print.

The materials required are few, but everything should be of the very best quality. The finest water-colors only should be used as coarsely ground colors are apt to contain gritty particles which cause trouble in working, while pigments of doubtful permanency are likely to change color and to cause the spotting to become unpleasantly obvious after a short time. Either cake or moist colors may be used, and should be of the quality known as "Artists." "Elementary," "Students," or "School of Art" qualities, although excellent in their way and

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cheap, are not suited to our work. Besides the ordinary colors as used by painters there are several makes of water-colors prepared especially for monochrome finishing. Winsor and Newton have a very fine series in brown, black, blue, and gray, with which any print may be matched. Some of these "carbon" colors also answer excellently for working upon ordinary prints. A little prepared oxgall and some "artists" gum water, a few sable brushes, and a small steel scraper complete the outfit. A piece of opal glass answers the purpose of a palette as well as the orthodox china article, but care should be taken to mix the colors on the smooth side, as the ground side, although nicer to use, quickly wears out the brushes.

How to Test a Brush

The brushes may range from No. 1 to No. 3 in size, and must be carefully selected. As a rule, those sold by photographic dealers for spotting are poor things, not one in a dozen being fit for this purpose. Those sold by the artists' colormen are better, and I have rather a fancy for those mounted in quills rather than those in metal ferrules. The test for a water-color brush is that it shall spring to a perfect point when wetted without being touched otherwise. All decent colormen have a pot of water ready for this test and quite expect to be asked for it. The brush should just be dipped into the water and given a shake to remove loose drops. If the point is divided it is worthless, and if it appears blunt or rounded it is not suitable for spotting. There is a special type of brush, made for miniature painting, which has very short hair; these are suitable for fine stipple, but do not hold enough color for our work. Brushes should never be allowed to stand in water nor should they be allowed to dry with color or gum in them; the best plan is to rinse them immediately after using and to stand them point upward in a jar or vase.

Removing Specks

The steel scraper is for removing small specks from any print and for lightening shadows and correcting details upon bromides. Carbons can sometimes be scraped, but are rather apt to chip. A small retouching knife with a fine point may be used, but will not be found so handy as the little pen-nib lancet sold as "print trimmers." These are used in an ordinary pen-holder and may be sharpened upon an oil-stone when they get blunt. A very handy tool for picking out spots may be made by driving a stout darning-needle into a piece of wood and breaking it off so that about an inch is left projecting. The broken end is then ground obliquely on an oilstone so that it forms a long oval face with square edges; this is excellent for lifting specks, being far better than a sharp point, which often raises fibers from the paper.

Useful Colors

If one decides to mix one's own colors, it will be found that most ordinary prints can be matched with some combination of lampblack, pink madder, and indigo. Sepia prints require sepia, vandyke brown, and burnt sienna, which may be mixed to almost any shade of brown, while for red-chalk prints it is best to use the special color from the tissue makers. The palette should be set with the colors and gum and should be kept in a plate box when not actually in use to avoid dust, which would soon render it useless if left uncovered.

Small and Large Spots

The actual process of applying the color to the print is simple if the beginner will be careful not to be too heavy handed. If there is a white spot to be covered and you only put half enough color upon it, it may pass, but if you put just a little too much color you have only exchanged a light spot for a dark one. This is usually caused by using the color too wet. The amount of water necessary is infinitesimal; in fact, there are some of the most skilful workers who hardly ever moisten the brush except between their lips.

Large spots should be first covered with as even a tint as possible, a little lighter than the surrounding parts, and

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By GERHARD SISTERS
ST. LOUIS, MO.

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then stippled up until the local texture is exactly imitated and, of course, any shadow or crease which runs to the edge should be continued across the spot. Such large defects are usually caused by the blocking out of injuries to the negative, and may be an inch across or larger and afford a good opportunity of displaying one's skill.

Platinums—A Very Little at a Time

In the better class of portrait-work a good deal more than ordinary spotting has to be done, and a certain amount of artistic skill is necessary. Fortunately matt surfaces are here the rule. The points mostly to be attended to are the subduing of harsh contrasts and the removal of any patchy effect which would detract from the general scheme of lighting. Strong lights on the hair must be toned down, false lights in the eyes removed, and double outlines worked out. As most of this work has to be done on platinum prints, from which it is almost impossible to remove color once it has been applied, it is necessary to use very faint washes, the first being little more than dirty water for toning down glaring whites and giving successive coats until the necessary depth is reached. The same method must be adopted for solid touches such as are used for improving the outline of the face, the hands, arms, and bust. It has also the advantage that a softer outline is obtained than by applying the color at full length. With practice it is easy to judge the depth of color necessary and the work can be done quickly, but the beginner will be saved many disappointments by proceeding cautiously at first. Most finishers now employ a mixture of methods in finishing platinum prints, using a stumping black for softening flat tints and afterward taking out the necessary lights with a soft erasing rubber. This is very efficacious for flat draperies, as the shadows are strengthened without it being apparent how it has been done.

Bromides and Carbons

Ordinary lead pencil is also useful, but a fairly hard grade must be used or the gloss will be objectionable. One has also to be careful not to indent the surface when using pencil. Chinese white may be used sparingly upon draperies which are degraded in the light, but it is difficult to avoid its presence being detected. It is usually desirable to take the blue tinge off the white by mixing a trace of yellow ochre with it. This is especially necessary on sepia prints on cream-tinted paper. Bromide prints are easier to deal with as the color can be more easily worked upon the surface and removed if an excess is put on. High-lights can be put in with the scraper and dark portions reduced and hard edges softened with the same instrument. Pencil can often be used effectively upon bromide prints, and any glossiness resulting can be removed by steaming the surface.

Carbon prints require much the same treatment as bromides, but are generally rather repellant of color, this being due to a trace of wax which they have brought away from the temporary support. This must be removed by rubbing with benzole or clean petrol applied with a pad of cotton wool and polished off with a clean pad.

Elements of Coloring

Finishing in color is a subject which can hardly be dealt with in the limits of this page, but my remarks as to the quality, colors and brushes apply as in monochrome work, while those regarding the different surfaces of prints are also applicable. A keen perception of color is necessary, and this can only be acquired by the careful study of other people's work. The complexion is, of course, the most important point, and most novices err in making it too pink. The first wash should be composed of yellow ochre mixed with a little pink madder. Sometimes a little vermilion may be added. This must be washed quickly and evenly over the face and neck, being careful to avoid going over the eyes and softening off the edge which adjoins the hair. In fact, the whole of the edges should be soft so as to avoid the impression of a patch of color. The lips are colored with a mixture of ver-

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milion and rose madder, the upper lip often requiring almost pure vermilion. The lips should be colored as smoothly as possible, the color not being applied in little dabs or stipple. The checks are stippled with vermilion and pink madder, care being taken not to overdo them in size of tint or depth of color. Some workers apply the tint on the cheeks in the form of very fine parallel lines, these being slightly curved and running diagonally downward. The beginner will, however, do well to adopt stipple at first as the desired effect is easier to obtain.

Face, Eyes, and Hair

The face may now be finished by strengthening the general color where necessary, and for this purpose yellow ochre, tempered with a little venetian red, will be found suitable, For sunburnt complexions a little raw sienna may be mixed in with the first wash. The shadows under the eyes should be tinted with a blue gray or neutral tint, but this must be applied very sparingly. Great care must be taken that one color is quite dry before attempting to put another over it, and the second or third painting should be done with as little moisture as possible and without rubbing the brush about. The eyes are difficult to paint, and the beginner will do well to do as little as possible as it is very easy to give them a hard, staring appearance. The pupil may, if necessary, be touched with sepia, or, for blue eyes, indigo, and the outline of the iris defined with a faint line of the same color. The iris is colored with its appropriate color, say, burnt sienna or vandyke brown for brown eyes, cobalt and Chinese white for blue, the light and reflection being put in with Chinese white. The hair is given a general tint, which should be very pale over the highest lights and the shadows painted with a deeper color. Above all, no attempt must be made to define single hairs or to introduce detail. Burnt umber, yellow ochre, vandyke brown, and lampblack will give a correct rendering of nearly all shades.

The background is an important part of the composition, and the finished effect will depend greatly on the suitability of the tint selected; as a general rule a color which makes a contrast to the general tone of the picture is to be preferred. Thus with golden or auburn hair blue is generally chosen; with a florid complexion and brown hair, dull green; with blue draperies, russet brown, mixed tints of green and red, stippled together, are very useful, but it is difficult to give precise instructions. The study of a few good miniatures will teach more in an hour than the biggest treatise which could be written. Here it has been impossible to do more than give a rough idea of how to go to work. —*British Journal of Photography.*

METHODS

A PAPER THAT GIVES GREEN PRINTS. It is said that a paper which will give green prints may be made by coating ordinary paper with a 2 per cent. solution of gelatin. The sensitive solution is:

Potassium bichromate	15 gr.
Magnesium sulphate	25 gr.
Water	1 oz.

This mixture is spread over the paper in the usual way, and the paper dried in the dark. Printing is carried rather far. The print is washed, then surface-dried, or blotted off on a pad and laid film upward on a sheet of glass, and the following developer is applied with a wad of cotton-wool wrung out:

Pyrocatechin	5 gr.
Water	1 oz.

The picture assumes a rich green color when developed, and is then washed for five or ten minutes and dried quickly by heat.

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A COMPACT ENLARGER FOR SMALL DARK-ROOMS

By WILLIAM S. DAVIS

IN these days both the progressive amateur as well as the professional do far more printing by enlargement than ever before, and the question of suitable apparatus which will save both time and trouble in doing the work is important to many. With the amateur, too, the matter of expense must often be considered, so the only choice lies between using a cheap form of daylight enlarger or a home-made apparatus. Undoubtedly a permanent enlarger in the dark-room is most convenient, but such an addition to the working equipment may have seemed out of the question because of lack of space, aside from cost. At any rate, I thought for some time this was the case in my dark-room, as it is only 5 x 7 feet on the floor, with a developing sink and chemical cupboard along one side and a work-bench filling the end space to the right; but the problem was finally solved satisfactorily without sacrificing any space when the enlarger is not in use, so a description may prove suggestive to others.

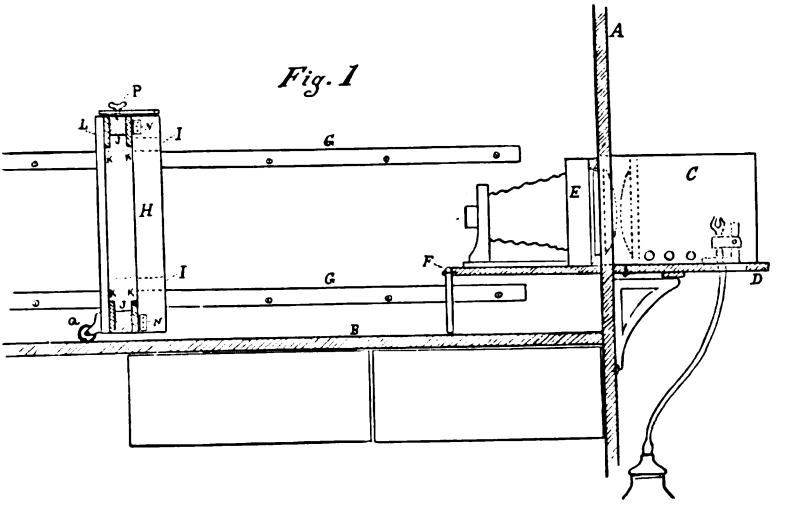
Wishing to be independent as to working hours and weather conditions, my plans called for artificial illumination of the negative, and, owing to the extra space required for the lamp-house and condensors, the question was how to obtain the required degree of enlargement from some negatives within a space of five feet, since the only good place for the apparatus was over the bench at end of room. Fortunately, however, one side of the room is formed by a partition which divides it from a narrow passage, so the space outside was made use of, as will be seen by referring to Fig. 1, which shows the general arrangement of the apparatus. *A* is the partition mentioned, and *B* the workbench, with material drawers below. As a substitute for the regular enlarging lantern I purchased the condensors unmounted, fitted them to a home-made lamp-house, and used this in connection with a long focus camera, substituting for the reversible back another adapted to hold a set of kits for negatives. The lamp-house *C* rests on a folding shelf *D* in the passage, a hole in the partition allowing the box to be brought in contact with the negative holder. To prevent the escape of white light outside of negative this opening is covered with a sheet of cardboard having a square cut out the size of largest negative accommodated, which makes the connection sufficiently tight when the camera is in place. The camera *E* rests upon another shelf *F*, which folds up when not in use and covers the opening in wall.

To save bench space the rails *GG*, upon which the easel travels, were fastened upon the end wall at back of bench, instead of being laid flat, as usual. These have deep saw grooves cut in their upper edges, in which the metal runners of easel engage, making it possible if desired to lift latter off, although as a matter of fact this is seldom done, as the easel is not in the way on the bench when run back to one side.

Now for more details about the several parts. The lamp-house *C* being outside the dark-room it was not essential to have it light tight, so it consists simply of a box built of ½ inch pine, with top and back open. The permanent front holds one condensor, while the other is mounted in a sliding panel, held by grooves inside, making it easy to clean both lenses. Electricity not being available, I used for a while a triple wick oil lamp (made for stereopticons) with good results, but later changed to acetylene, making use of a portable lamp as generator, this being connected by screw coupling and heavy tubing to the jet, which is simply a ¾ foot duplex burner, such as used on autos, mounted in a spring clip attached to a sliding block, with adjustment for raising or lowering, to permit of accurate centering. Generator and mounted jets

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Fig. 1



can of course be had ready for use, and it is usually considered desirable to employ several jets mounted in tandem, but I have found one strong enough for convenience with a rapid bromide paper, the average exposures ranging from five to ten seconds for ordinary negatives. Of course if much work is done upon the so-called gaslight papers a more powerful light would be desirable, although with only the single jet it is possible to secure good prints of two or three diameters enlargement from thin negatives by giving three to five minutes' exposure on the fastest grades of developing paper, such as Normal "Cyko."

The holder for the negatives consists of a nest of kits which fit into a square frame, sliding vertically in another having a lateral shifting movement, these two being mounted upon the back, which snaps on in place of the regular one.

After inserting a negative the camera is pushed up against the opening in wall, ledges on each side of the shelf *F* serving to keep it in alignment.

One of the most important parts of an enlarging apparatus, from the standpoint of convenience at least, is the means used to hold the sensitive paper in position. The easel here shown (see side view in Fig. 1 and vertical section Fig. 2) consists of a base *H* upon the back of which is fastened blocks *II*, to which are attached brass runners that work in the grooves of rails *GG*. To the outer side of this base is hinged an open frame, consisting of top and bottom sections, each of which are made by placing a strip of wood *J*, a trifle thicker than paper holder, between two wider pieces *KK*, to form grooves for the holder to slide in. These sections are joined at the proper distance apart by cross pieces *LL* and end strip *M*, to which the hinges *NN* are attached. A

Fig. 2

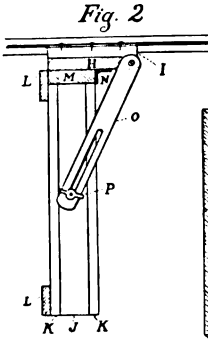
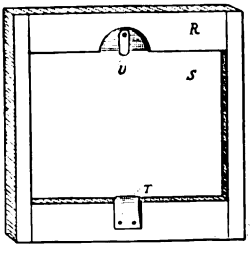


Fig. 3



slotted arm *O*, pivoted at the top of base *H*, and clamped by a wing-nut *P*, permits one to swing the frame off the square when necessary to correct distortion of parallel lines in a negative. When mounted upon the rails the lower part of easel should clear the bench a little, but to prevent sagging of the outer end, it is well to attach a small

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wheel *Q*, such as a furniture castor, which will travel upon the workbench. I have not found it essential to use anything to fasten the easel after focusing, as it is not liable to slip accidently upon the rails.

The paper holder proper (shown in Fig. 3) is perfectly square outside, to permit of reversing for upright or horizontal pictures, and consists of a frame *R* with solid back *S* sunk about a quarter of an inch below the surface. This is lined with smooth white blotting-paper, upon which is ruled the sizes of paper commonly used. Fitting the opening is a sheet of clear (preferably crystal) glass, which is pressed tightly against the back by a spring clip *T* and spring button *U*, so in loading one has only to lift one side of the glass while the holder lies flat on the bench, insert paper and clamp glass down, which is much quicker than pinning the paper to a board.

To anyone unfamiliar with the optical requirements of an apparatus in which condensors are used the following point may be useful.

A small objective of short focus should not be used with rather large condensors, as the smaller the working aperture of the objective the more difficulty will be experienced in securing even illumination on the easel, while a short focus in proportion to that of the condensors makes it necessary to place the light much further from latter, with consequent loss of power. I think the best results are secured by using an objective of a little longer focus than the condensors. With a pair of condensors the size needed to cover a 4 x 5 negative, and having a focus of about five inches, this would mean using an objective of six to eight inch focus with a working aperture not smaller than *f*/8. I have used a seven and a half inch RR., and six-inch anastigmat at *f*/6.3.

In every case where much change is made in size of enlargement the negative should be removed after a fairly sharp image has been secured and the light moved back and forth until an evenly illuminated field is seen on the easel. The necessity for this is due to the fact that the image of the light should come to a focus in the aperture of the objective, so of course as this is moved when a change is made in degree of enlargement it makes necessary an alteration of the conjugate foci of condensor with relation to the light. Some use a ground glass between the condensor and light, which allows more freedom in adjustment, although of course it means some loss of light.

NEW AMIDOL DEVELOPER

By F. C. LAMBERT, F.R.P.S.

DURING the last two or three years not a little attention has been given to acid amidol or diamidophenol developer, and a considerable number of formulas have been suggested. With the help of my assistant I have been able to collect and collate a number of these formulas with a view to arriving at what one may term average or typical mixtures, as it was quite out of the question to make separate and comparative tests of anything like all of them. Nor did this course indicate much interest, as they varied in only trifling degrees in many cases.

The annexed tabulation will show not only a decided family resemblance, but also a considerable range of relative quantities.

In some of the articles published various claims are made on behalf of advantages offered by acid amidol—and when I say "amidol" in this connection I include diamidophenol by implication. I may say at once that I do not at present find any of these claims of advantages

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conspicuously apparent in my own tests, but that may come later on. On the other hand, I am free to confess that by acid amidol one can get negatives which apparently are quite as good in every way as those obtained by alkaline amidol. I must also admit two features which may have weight with some readers. The acid developer seems less prone to give stain, and also it is very easy to get thin and delicate, soft-contrast negatives in this way. For certain subjects, *e. g.*, snow landscape or indoor portraiture with white or light costumes such soft-contrast, delicate negatives may be appreciated by workers who have hitherto had difficulties.

Again for minimum hand-camera exposures this method may prove a boon, especially in the hands of those who have not had much previous experience. But this must not be taken to imply that acid amidol is a "save all" in case of serious underexposure. The following are among the points put forward by various advocates of acid amidol:

1. Metabisulphite takes the place of bromide as a fog preventer.
2. Development commences at the glass side of the film.
3. The more acid the solution the slower it acts. (This seems to be the case.)
4. There is least fog of all when the developer is exactly neutral.
5. Increase of acid reduces contrasts (*vide* 3).
6. Bromide reduces halation effect (*vide* 2).
7. Overdevelopment is difficult, if indeed possible, with acid amidol.

The annexed table shows a dozen or so formulas and also the very considerable range of most of the constituents.

As the result of various experiments we fixed on the following formula:

In place of bisulphite lye, which is not very generally obtainable, we prepared the following substitute: One ounce of soda sulphite (crys.) crushed to powder was added to 2 ounces of tepid water. The 85 minims of sulphuric acid were added to ½ ounce of water, drop by drop, slowly. The receiving vessel is placed in a basin of cold water, as the addition of this acid to water evolves heat. (The water must *not* be added to the acid, but *vice versa*.) This diluted acid was then added *very slowly* to the sulphite solution. This constitutes acid sulphite stock solution S. To prepare a developer, to 10 ounces of water add 50 grains of soda sulphite (crys.) then add 40 to 45 grains of diamidophenol—which is very considerably cheaper than amidol and seems to be equivalent to it for all practical purposes. Finally add 50 minims of the above stock solution S. The developer is decidedly acid to litmus. There is my acid developer for the following experiment:

Now for the normal alkaline diamido developer against which the acid developer is to be used as a test. To 10 ounces of water add ½ ounce of soda sulphite (crys.) and 30 grains of diamidophenol. (Filter both developers through cotton-wool.) As a test subject we took a number of variously colored objects, put on a black tablecloth against a dark green paper-covered wall, *e. g.*, a dark bronze bust; brass jug; green match-holder; syenite vase—dark red, green, and black; blue-willow-pattern plate; Oriental plate in red, green, blue, and gold; white card bas-relief, and some postcards.

Two plates C and D from the same

ACID AMIDOL DEVELOPERS

	1	2	3	4	5	6	7	8	9	10	11	12	13	Range.
Water	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10 oz.	10
A or D	45 gr.	20 gr.	45 gr.	30 gr.	45 gr.	30 gr.	22 gr.	45 gr.	20 gr.	50 gr.	70 gr.	20 gr.	70 gr.	20– 70
Soda sulphite	60 gr.	30 gr.	25 gr.	300 gr.	50 gr.	180 gr.	40 gr.	60 gr.	220 gr.	300 gr.	500 gr.	2 oz.	210 gr.	30–300
Potas. metabisulphite	160 gr.	..	..	..	..	..	..	..	30 gr.	..	..	120 gr.	..	30–160
Bisulphite lye	..	50 m.	120 m.	200 m.	..	100 m.	..	30 m.	..	240 m.	..	..	25 gr.	30–200
Soda bisulphite	..	..	..	..	40 gr.	12 gr.	..	..	..	..	..	..	..	12– 40
Oxalic acid	..	..	..	..	..	..	..	..	..	..	8 gr.	..	..	8
Potas. bromide	..	..	..	10 gr.	..	..	..	..	..	10 gr.	..	2 gr.	..	2– 10
Am. bromide	..	..	..	..	..	..	30 gr.	..	..	..	..	..	..	30

A or D stands for amidol or diamidophenol.

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box were equally exposed: C was developed five and a half minutes in the normal alkaline developer as above formulated. D was developed in the above acid developer for eight minutes.

To serve as an identification of the negatives the postcards on the table were shifted between the two exposures, otherwise the subjects and exposure conditions were not in any way altered.

The resulting prints are very closely comparable (except for the position of the postcards). So far as shadow detail, gradation, fog, etc., go, I fail to observe any difference.

Had the acid developer negative been removed at the end of five and a half instead of eight minutes the result would have been a softer negative, or a shorter range of tones, which might have been mistaken for a longer effective exposure. Probably this showing of the development action has given origin to the notion that acid amidol gives more shadow detail.

PRACTICAL HINTS ON RETOUCHING

IT may be explained that I have never had any lessons in retouching and that what I know has been gained partly from reading but chiefly from the best of all teachers, Messrs. Failure and Experience.

Pencils. These are of two kinds: (1) Hexagonal cedar wood, (2) loose leads in an adjustable holder. The latter are far more convenient and economical. One holder will suffice (cost 25 cents). The loose leads are made in six degrees of hardness (cost 25 cents per box of six leads). The most useful numbers are 2 "soft," 4 "hard," and 6 "very hard." Insert a lead, leaving just about one inch projecting from the holder end and screw up the end moderately tight. Do not use a knife for sharpening. Glue a bit of moderately rough glasspaper to a bit of stout card or strawboard and a piece of the finest glasspaper to the other side. Shape the end of the lead with the rough sandpaper and finish off with the fine paper. Do not rub the lead to and fro but use a rolling and rotating motion. Rubbing the lead tends to break away the fine point.

Medium. Ease of working partly depends on having the medium not too thick, or it is sticky; not too thin, or it does not give enough tooth. Medium made with turpentine gets thicker with age, also every time the cork is taken out of the bottle some of the turpentine evaporates. Hence a few drops of fresh turpentine should be added to the stock bottle every now and again.

The medium should not be thin enough to run off the glass rod, but to come off in drops, about one every five or six seconds when the rod is withdrawn and held vertical. The medium should be about as thick as thin dairy cream, but not thicker.

The Glass Rod. Procure a short piece of glass rod, say four inches long and about $\frac{3}{32}$ inch thick. Hold an end of the rod in the gas-flame until the glass softens and rounds itself neatly. Let this cool gradually and round off the other end. With a red-hot knitting-needle bore a hole in the cork of the retouching bottle just large enough to permit the glass rod to pass through and yet be held tightly. With this rod we can transfer one small drop of the medium to any part of the negative. The rod is so adjusted in position that its end always dips about half an inch into the medium in the bottle.

The Touch. Do not confine yourself to any touch, but learn to use them all, viz., the dot given with the pencil held vertical to the negative, the straight and curved comma, the wavy line, the spiral, *i. e.*, commencing with a dot or point and then carrying the pencil-point around and around this dot in a slowly increasing circle or spiral. (This touch is very useful for filling up freckles,

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air-bell marks, or small froth marks due to faulty development.) The worker must also learn to move his pencil-point along a straight or nearly straight line, as this touch is very useful in dealing with grass, leaves, facial wrinkles, junction lines in masonry, etc.

The Desk. The negative must be firmly supported, *i. e.*, so that it does not rock or tremble when touched. It does not in the least matter what sort of a retouching desk is used provided it is steady, holds the negative at a convenient slope or angle, and gives a good light. In some forms of desk the negative is made to rest on a piece of clear glass. This is a mistake, for it endangers the negative slipping about. Spots on the supporting glass may be mistaken for spots on the negative. The best slope or angle can only be found by experience. About 45 degrees is recommended. The height of desk and slope of negative and its distance from the eyes should be adjusted so that the worker's body is as near upright as possible. A sloping position is bad for body, brain, and eyes. Keep the eyes as far away as possible from the negative, provided that vision is sharp and no strain on the sight is felt.

The Reflector. A looking-glass or mirror is the worst of all. The best is a sheet of opal or milk-white glass with one surface ground mat. This is used by those who work the carbon process, and the photographic dealers' stock "ground opal" in the usual sizes. A piece ten inches by eight inches is convenient and only cost about ten cents. When it gets dirty, wash it with soap and water and a nail-brush. Next to opal is quite clean white blotting-paper. Next to that white cardboard.

The Mask. This is simply a piece of black paper about eight inches square. About the centre an oval hole cut out, measuring, say, one inch by three inches. A second mask with a smaller opening, say two inches by one and one-half inches, is also convenient. The mask is laid on the negative and serves a threefold purpose: it concentrates attention on the part to be worked on; it protects the eyes from needless light; it prevents the hand soiling the negative.

Some Beginners' Mistakes. (1) Do not try to fill up large, clear, glass spots by retouching. It can be done easier and better by the brush and color. (2) Having applied a drop of medium to the part requiring attention, then *lightly* spread it till it occupies a space about as large as a penny, using for this purpose a bit of fluffless rag. Then let it alone for about ten minutes, so that some of the solvent can evaporate. Then take another bit of rag and rub lightly with a circular or spiral movement until *nearly* all the medium is removed. The beginner puts on a drop of medium and at once rubs it all off again and so finds it difficult to get a "tooth" to take the lead. It is also a mistake to use the finger for applying or rubbing the medium as is sometimes recommended. (3) Do *not* commence your retouching experiments with a portrait, but use any ordinary landscape negative, and make up your mind to sacrifice this negative in order to practice, and to see what you can and cannot do. (4) Always take a trial print before beginning work; examine this and mark the parts requiring attention with circles round them. Keep this print until a second one has been made after retouching and compare the two, point by point. (5) When applying color have the brush too dry rather than too wet. The right degree can only be learned by practice. Most beginners fail by reason of using the color far too wet and watery.

The Brush. Make this experiment: On the waster negative make two large pinhole spots by scratching away the film from two circular patches about as large as the letter O. With a small fine-pointed camel-hair brush, as used for water-color painting, apply a blob or drop of rather thick color mixture; any color will do for the experiment. Let this dry, and behold all your color has forsaken the centre of the spot and formed a dark ring along the film edge. Now repeat with the second clear spot, but this time mixing the same color with a drop of office gum, which should be about as thick as maple syrup. When this is dry the color will be fairly even all over the hole. Moral, use gum-water.

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The Gum-water. Take a teaspoonful of gum arabic, wrap it quite loosely in three or four thicknesses of brown paper, and crush it under the boot-heel. Put about a tablespoonful of hot water in a cup and add the gum powder. Keep in a warm place and stir until dissolved. Then add *one drop* (not more) of carbolic acid, stir well and allow to settle. Pour off the clear part into a small bottle. Fit a glass rod to the cork in the way already described; use a wide-mouth bottle, a rather loose fitting cork. Clean the bottle neck and be very careful not to touch the bottle neck or rim of cork with gum or they will stick and you will get broken bits of cork in the gum bottle.

Colors. This is largely a matter of fancy. Personally I recommend a mixture of lampblack and yellow ochre for pyro developed negatives. The "half pans" of moist water by such firms as Reeves, Rowney, Winsor, and Newton are quite cheap (price 10 cents) and last a very long time. For small pinholes in the sky I advise a half pan of vermilion. This is very opaque and a very tiny touch stops all the light.

Brushes. One or two are needed. Those mounted in a tin ferrule are the best. The point when wet should be fine, springy, and not too long. When buying, test the point by drawing the brush through the lips.

Color and Density. Do not forget that our aim should be to fill up any holes with pigment which is of the same color *and also* the same density as the surrounding parts. For this reason opaque are better than transparent colors. But the test of the work is the print it gives. The best eye may be deceived; therefore reserve judgment until the print is made.

Cleaning Off. Should the work for any reason prove unsatisfactory, it can be easily removed by rubbing gently with a bit of clean rag and a couple of drops of wood alcohol. The beginner is strongly advised not to be satisfied with his work if he feels that the result is not satisfactory. Therefore, let him clean off and begin again.

Piling on the Lead. It may sometimes happen that we want to get on all the lead we possibly can. For instance, a nearly clear air-bubble mark in the dense part of a sky. Apply medium as usual. Then go all over with the dot and vertical pencil; this adds a kind of extra tooth which takes lead from the spiral touch. Now gently breathe on the part, when it will be found that we can get on more lead again. Cover the dot with a bit of tissue paper, rub with the finger-nail, and then begin again with the dot.

Artificial Light. The fact that one can use a constant artificial light makes many prefer this to ever-varying daylight. The reader is advised to accustom himself to both. The point about any light is that it should evenly illuminate the reflector. White cardboard makes a good reflector to put round the lamp to throw its light on to the reflector. Do not attempt to use the lamplight direct, even with a ground-glass diffuser. Always look through your negative downward at a white reflector.

Reducing. I have said nothing about the knife for scraping or cutting away over-dense lights, because the beginner is strongly advised not to attempt anything of this kind until he is fairly expert at pencil and brush work.

Final Hint. Under rather than over do the work. The best worker is he who produces his desired effects with the least alteration of the original.—*Practical and Pictorial Photographer.*

RODINAL FOR BROMIDE PAPER. A German writer states that 90 minims of rodinal and 75 minims of a saturated solution of potassium carbonate, with 32 ounces of water, make a developer for bromide paper which yields prints of a rich warm-black color.

NEVER call your red-haired stenographer your flame.

A DEAD advertisement is about the deadest corpse there is.

POVERTY is not a disgrace if it comes from paying your debts.

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ANNOUNCEMENT OF THE FOURTH ANNUAL PITTSBURG SALON, WHICH WILL BE HELD DURING THE MONTH OF MARCH, 1917

IT is with exceeding confidence that the management of the Pittsburg Salon makes this announcement, for each succeeding exhibition has witnessed a growth in quality, in number of pictures submitted and in general interest regarding the Salon that is decidedly reassuring and leaves no doubt that the annual show in Pittsburg is destined to become the classic event in American amateur photography.

Many years of experience has taught those who have planned this enterprise that success depends absolutely on their close adherence to certain well-known principles, and understanding this the work has been carried on from year to year with resultant credit to those in charge and to the satisfaction of patrons.

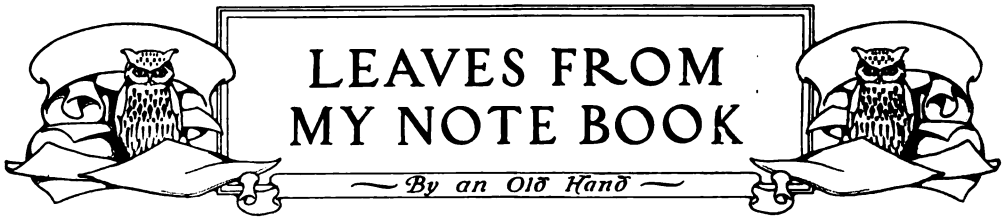
Every inducement consistent with dignity is extended to prospective exhibitors and assurance is given that their pictures will be judged by a competent and unbiased jury.

The Pittsburg society has financed the Salon without recourse to outside assistance, and in addition to this all prints, whether accepted or not, are returned to the owners, carriage charges paid.

The Salon offers to the ambitious pictorialist an opportunity, not only to exhibit his (or her) work in the largest and most famous art gallery in the United States, but eventually, at the discretion of the jury, to become a member of the Salon and a participant in the privileges and honors which go with such membership.

Merit is the only avenue that leads to membership, and the additions which are made annually to the list are those exhibitors whose work shows "distinct evidence of personal artistic feeling and execution."

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MOUNTANTS

THE purpose of a mountant is to stick a print to its mount. Some do and some do not, a good deal depends upon the mountant.

The easiest method of mounting a print is certainly to use the dry adhesive sheets, which with a hot iron, especially the electric iron, are very easy to use and most satisfactory for medium-sized prints, but not so complete for large prints. Naturally much depends on the size of the print and the way one decides to mount it. If it is necessary to cement the print down to the mount all over, then possibly one of the older methods is preferable. At least the dry adhesive has the advantage that it never cockles either mount or print, but occasionally I have found that some of my large specimen prints mounted by this method show a tendency to leave the mount after about two years. Of course, during their life they have been subjected to fairly rough handling, much more than the average print sent out.

Of the old wet mountants, by far the best, when large quantities of prints have to be dealt with, is the old starch mountant when properly made, and making it is an art. Do not use household flour but the starch powder obtainable from any decent drugstore. An ounce of this should be rubbed up into a thin cream with two ounces of water, this being added little by little and the whole thoroughly worked till there is not the slightest sign of a lump. In a clean saucepan put eight ounces of water and bring to the boil, and when and while it is boiling add the thin starch cream slowly and with constant stirring, and when all is added continue to boil gently for five minutes and then cover with a plate and set on one side to cool.

When properly prepared this paste is almost transparent and shows not the slightest sign of a lump. When cold it is advisable to take some fine cheesecloth and break the paste up and put in the cheesecloth and squeeze through into another vessel. Or one may just skim the skin off the top with a knife or spoon.

To use this the prints, no matter by what process, should be damp, not wet, and the mounts ought to be marked with a pencil dot or short line round two opposite corners. Place the print face down on a sheet of glass (an old negative answers well) and work the paste into the back with a stiff bristle brush. Too much must not be used. Then the print can be lifted by one corner, using a flat penknife blade, and lowered into position on the marked mount. Before placing the next print down on to the glass this should be wiped, until quite free from any trace of mountant, with a wet sponge.

Another method, and a successful one when you get the hang of it, is to coat a sheet of glass pretty freely with the starch mountant, lay the print face up on the glass and run a roller squeegee over it and then lift and transfer to the mount. This ensures a very even layer of mountant and with care none ever gets on the front of the print.

The next class of mountant and a really good one is the white dextrine paste obtainable commercially, but which can very easily be made at home. This is certainly the cleanest and the most economical that one can use, whether one makes it or buys it. When large quantities of work are to be done then certainly it is cheaper to make, but for small consumption it is far better to buy, for although its manufacture looks easy there are one or two fine points that must be attended to.

Many formulas have been published for this, but the best so far is one that was put forward either by the Bureau of Standards or some other august body on this side—naturally, therefore, it has oil of wintergreen in it; this, however, is a point we shall refer to later.

Best white dextrine .	2¾ lbs. or	1400 gm.
Water	80 oz.	2550 c.c.
Oil of wintergreen . .	15 minims	1 c.c.
Oil of cloves . . .	15 "	1 c.c.

The first point is as to the dextrine. This must be the very best quality, inferior and yellow kinds are not satisfactory. Mix the dextrine into a thick cream with a little cold water, rubbing any lumps out with a spoon or other convenient tool and then add gradually the remainder of the water, heated to 180° F. This is one of the points where trouble can ensue. Unless the water is added gradually and the whole well worked one invariably obtains a lumpy mass, which in the end is not satisfactory. It should form a perfectly smooth, transparent liquid. Then heat for at least ten minutes and add the oils and pour into pots.

The oils are merely to act as preservatives and satisfy the prevailing fashion for that most hideous of all flavors—wintergreen. Carbolic acid is equally as effective and less nauseous to some, and if a 10 per cent. solution of carbolic acid—phenol, the wise call it—be used instead of the oils, the paste will keep as well as ever.

I hope no one will assume that the above is going to give him a paste as white and as creamy as that obtainable commercially, because he will be grievously disappointed. The jars must stand about fourteen days for it to set to the

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familiar creamy white paste, unless, of course, one has a refrigerator handy and then a day or two in that at a low temperature will give the paste its well-known appearance.

One of the great advantages of this dextrine paste is that it is simple to make. It keeps well and should a little get on the face of the print it can be readily wiped off with a wet sponge.

VIEWS AND REVIEWS

What Are You Going To Do About It?

It is coming again and it is almost here. Many of us, who are getting older, think a few weeks before Christmas that this year we will not bother with Christmas gifts: We haven't the time to look after them; we haven't the money to spend; but, somehow or other, before Christmas Day actually arrives we have become enthused with the Christmas spirit of glad tidings to all people, and we immediately wake up to the fact that we have many friends whom we wish to remember. And after we have once started, the list increases day by day, and when Christmas actually arrives, we find that we have not only sent gifts of some kind to those to whom we have sent in former years, but we have added new ones to our list. Of course, relatives and personal friends receive the first and greatest attention, but we remember in some way many others if by only a postcard. In other words. every one, without any exception, poor as well as rich, are sure to spend money for presents during this month to be distributed to their friends and relatives.

There is no other time of the year when the heart becomes so light, and when we will dive into our pockets, forgetting all about trying to save money this year, or about the bills which will come due later on. It is good luck, good courage, good business, and a Merry Christmas to every one that we meet. We even forget, during this short period of the struggle which we are making to increase our business, to make a little larger profit this year than last, and even wish our competitors who have taken business from us during the last year, a cordial, happy, Merry Christmas.

Yes, it is the Christmas season! We are no longer poor; all rich. The world is glad and bells are ringing and our heart is light, and we wish just for the time being to give all that we can to make others happy also. We give more to charity; give more to the needy; we overlook this season of the year the errors and, yes, in many cases, crimes of others. If we could only keep up this same spirit throughout the year, what a difference it would make in our lives and the lives of those with whom we associate; and the time has gone by when the Christmas gift must be something of value or something especially adapted to the needs or pleasure of the one that receives it. It is the thought that goes with the gift that makes both the giver and receiver happy. It is the time of year when mother and father will make many sacrifices in order that the little ones may receive just the thing that will make them happiest on Christmas morning. It is the time of year when they will spend money for toys when at any other season of the year they would consider this money thrown away. This Christmas spirit, this good cheer, this exchange of gifts, is the greatest and best thing that can happen to any and all of us.

Oh, Christmas spirit bring to me,
A larger love for what is good,
A better faith in God and man,
Of saving grace in brotherhood;
And from the islands and the seas,
And yonder where the planets shift,
Bring hope and faith and love and truth,
To be a world-wide Christmas gift!

—*Ohio Photo News.*

"Useful Tables for the Photographer"

The above is the title of a useful booklet of information issued by the Bausch & Lomb Optical Co. of Rochester, N. Y., and covers stop systems, hyper-focal distances on various lenses at the different stops, etc. The portrait photographer will find tables of image heights for various studio distances, and other tables covering angle of view, shutter speeds for moving objects, lens notes, etc. The care of the lens is treated in a special page.

It will be well worth while to send for a copy by applying on a postal.

"Practical Studio Advertising"
By J. C. and C. L. Abel

A collection of one hundred original advertisements, coupled with some effective business-getting ideas for the professional photographer's use. The specimen advertisements are well displayed, and many of them have very catchy headlines. The book is published at $2 by Abel's Publications, 917 Schofield Building, Cleveland, Ohio.

Improve Your Work

It is several years since the Eastman School has been covering the whole of the United States. The school today is no comparison to

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what it was when it originated. No money has been spared, and every effort has been made, to make this school of value to the photographers all over the country.

Furthermore, the photographers who have attended the school each year and given attention to the teaching have improved very rapidly.

Be on the lookout for the Eastman School in your locality. It will be worth while.

The Annual Pittsburg Salon

The Annual Pittsburg Salon of Pictorial Photography will be held in the Art Galleries of the Carnegie Institute, Pittsburg, Pa., March 1 to 31, 1917, inclusive.

All prints submitted will be passed upon by an impartial and thoroughly competent Committee of Selection. Prints possessing the highest merits in artistic expression and execution will be hung.

The Pittsburg Salon is distinctive in its annual exhibitions, being held in the spacious galleries of the Carnegie Institute, which surpass any other galleries.

Entry blanks, containing full information and conditions of the Salon, may be obtained by addressing C. E. Beeson, Secretary, 1900 Frick Building, Pittsburg, Pa.

Last day of entry, Saturday, February 10, 1917.

New Finger-print Camera

The Folmer & Schwing Division of the Eastman Kodak Co., have just placed on the market a finger-print camera that is quite an innovation. The makers describe its working as follows:

"As the camera is equipped with four electric lights, operated by batteries, contained in the camera, the operator is not hampered by darkness. Day or night, indoors or out, the camera gives equally perfect results. No expert knowledge of photography is required for the successful operation of the camera, as all unnecessary adjustments have been eliminated. To photograph a finger print or other subject, it is simply necessary to open the metal door at the front by pressing a button on the under panel, and place the front of the camera firmly on the subject to be photographed, draw the dark slide in the plate or film holder, and make the exposure by pressing down on the lever at the right. The action of pressing down the exposure lever automatically turns on the four lights, and at the same time opens the shutter. The lens is of the correct focal length to record the finger prints full size on the negative, from which enlargements of any size may be made. Immediately under the exposing lever a small metal button is located; pressure on this button turns on the light without opening the shutter, enabling the operator to use the camera as a flashlight for locating the finger print. Storage space is provided inside the camera for six extra lamps."

"The Sun and the Artist"

This is the well-chosen title of an exceedingly tasteful folder on the accomplishments of Louis Fabian Bachrach of the well-known Bachrach studio, by Thomas Dreier. Among the good things Mr. Dreier says we quote the following:

"The ideals of no institution rise higher than the dominating personality. The spirit with which an artist works is of infinitely greater importance than the tools with which he works. And it is this spirit at Bachrach's that, working through everybody, produces those results which have created friends everywhere."

This is another example of what an up-to-date photographer is doing in the right way to increase his business.

"Artatone for Prints and Enlargements"

This latest booklet, issued in most attractive form by The International Photo Sales Corp., describes not only "Artatone," the new printing paper for which this firm are the sole distributors, but gives full information concerning the new printing and enlarging service on "Artatone." We are pleased to note that for the short time this service has been established a large number of photographic workers who desire one of the most expressive and artistic mediums for the interpretation of their work have used this service with satisfaction.

By applying to the company's office at 13 East 40th St., New York City, they will be pleased to forward a copy of this booklet to anyone interested. Upon receipt of ten cents in stamps they will also be pleased to send a sample of "Artatone" print, size 3¼ x 5½.

"Light and Shade and Their Applications"

By M. Luckiesh, Nela Research Laboratory.

Cloth, 266 pages. Price, $2.50 net. New York: D. Van Nostrand Company.

We are unaware of the existence of any treatise in which a general analytical discussion of light and shade has been fully presented, and therefore this book is all the more welcome and will be found helpful in many arts. The esthetic side of the subject is usually touched upon for the purpose of illustrating the usefulness of a knowledge of the science of light and shade. The esthetic problem is, as a whole, however, indeterminate, because it involves individual taste. Every art must have a scientific foundation consisting of indisputable facts unrelated to individual taste, and it has apparently been the aim in the preparation of this book to supply at least the skeleton of this foundation for the applications of light and shade.

There is an exhaustive chapter fully illustrated on "Light and Shade in Photography" which will prove of real value to every photographer. We can supply this book at the listed price.

E. L. Hamilton with the Wollensak Company

Mr. E. L. Hamilton, for some four or five years connected with the Kansas City Photo Supply Co., has been appointed assistant manager of the Promotion of Trade Department of the Wollensak Optical Company, of Rochester, N. Y. Mr. Hamilton is a progressive and most congenial sort of fellow, well versed in the photographic industry, and the bulk of his work will be traveling in the interest of the Wollensak Optical Co. through the middle and far West.

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Mr. Dawes, manager of the Promotion of Trade Department, will spend most of his time in Rochester, as pressure of business demands his presence there.

A Device for Automatically Masking Reversible View-finders

This handy little device does away with the disappointment so often experienced by camera users when, on seeing their negatives, they discover that portions of the subject plainly seen on the focusing screen of the view-finder are missing in the finished picture. This trouble is due to the fact that focusing screens on reversible view-finders must of necessity be cross-shaped and therefore do not correspond proportionately to the proportions of the sensitized medium within the camera of which the view-finder is a part. The Automatic Masking Device, as it is called, is designed to entirely overcome this trouble. It consists of two thin metallic leaves connected at one of their edges, said leaves being held together by a pintle which is suitably fastened to a support behind the view-finder. Around this pintle is a small coil spring, the terminals of which engage these leaves and urge them toward each other, thus holding them against the adjacent side faces of the view-finder. Each of these leaves has a rectangular opening, said openings being relatively at right angles to each other.

When it is desired to take a vertical picture the view-finder is adjusted to the proper position for the taking of such a picture, and automatically that leaf of the masking device having the opening which is proportioned to correspond with the proportions of longitudinal dimension of the sensitive medium vertically will be over the focusing screen of the finder, and only the objects which appear within the opening will be seen on the finished picture.

In taking a horizontal picture the finder is rotated angularly through a distance of 45 degrees and, again automatically, that leaf of the device having the opening which corresponds to the longitudinal dimensions of the film horizontally appears over the focusing screen, whereupon the operator sees his subject exactly as it will appear in the finished picture.

In rotating the view-finder from one position to another it will be noted that the leaves will be separated and disposed obliquely to each other, but that the tension of the small coil spring will cause them to correctly adjust themselves against the sides of the finder when once it is moved to its adjusted position.

Living Photographs

The invention consists in a special form of photograph, namely, one intended to produce an effect of life or movement as the eye is moved in relation to it. In photographing the subject, two or more exposures are made on the same plate through a ruled screen placed immediately in front of the plate and moved the distance of the width of one of its clear bands between each exposure. The print from the negative is mounted behind a similar screen placed a certain distance in front of the print. On viewing the photograph from three slightly different points the effect of movement is obtained.

The Camera Man: His Adventures in Many Fields: With Practical Suggestions for the Amateur

By Francis A. Collins

12mo. 325 pages; 32 full-page illustrations. Price, $1.30 net. New York: The Century Company.

A fact-story that reads like romance, telling what men can do, what men are doing every day, with the black box with the unprejudiced eye. A book full of entertainment and information for the general reader interested in adventure and popular science and of very special value for the amateur photographer, to whom it offers many ideas for the enriching of his experiences with the camera.

Most people do not realize what a large and important work the camera does today, into how many and what various spheres of activity it has been called. Mr. Collins knows his subject intimately, and he presents it with simplicity, completeness, and charm as well as with scrupulous accuracy.

The following, which are some of the chapter-headings, indicate the scope and nature of the book: Aëroplane Photography; The Camera Man at Sea; The "Movie" Reporter; The News Photographer; The "Movies" in Warfare; The Commerical Photographer; History of the Camera; Color Photography; Photography in Science; Many Kinds of Cameras.

Professional Photographers' Society of New Nork

Active preparations are being made for the coming Thirtieth Annual Convention of the Professional Photographers' Society of New York, to be held February 26, 27 and 28, 1917, at Hotel McAlpin, New Nork City. This convention promises to eclipse the big success of last year. Mark these dates on your calendar. Further information will be given in our January issue.

Milwaukee for Next National

After carefully considering the five cities and towns from which we received invitations, the official board of the P. A. of A. for 1917 has decided that Milwaukee is the logical location for the next national convention. We therefore announce that the next board meeting will be held in that city in January, and if all the necessary requirements for housing the convention are met in the same hearty spirit displayed in this city's proposals to us, we will hold the next annual convention in Milwaukee. The dates will not be decided upon until the board meeting.

By order Executive Board of P. A. of A.,

Jno. I. Hoffmann, *Secretary.*

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THE WORKROOM

By the Head Operator



TIME-SAVING DEVICES
INTENSIFYING UNDEREXPOSED NEGATIVES
GASLIGHT OR BROMIDE—WHICH?
PHOTOGRAPHS ON MIRRORS, BACKED WITH A SILVER DEPOSIT
PENCIL MARKS ON BROMIDE PAPER
A SIMPLE EMULSION FOR MATT OR GLOSSY P. O. P.
WASHING UNDER THE TAP
FADING OF MATERIALS
FAMILY TREE OF THE COAL-TAR DEVELOPERS
RETOUCHING HINTS
BUYER'S GUIDE
DEALING WITH COMPLAINTS
STAINED BROMIDE PRINTS
PYRO-AMIDOL
FIXING A PHOTOGRAPHIC PLATE BEFORE DEVELOPMENT
PROFILES
IMPROVING BROMIDE PRINTS

SOME TIME-SAVING DEVICES

MANY photographers now working short-handed would be well advised to take full advantage of each and every method of saving time in all the various operations in connection with the work of developing, printing, and mounting. It is far from my policy to suggest that any part of photography should be skimped or hurried, or that the photographer should spare time or effort on any of the artistic part of the work, as in the long run time presumably saved in this way is really only time wasted. For instance, hurried or skimped operating will result in faulty negatives, requiring a great deal of time and care if they are to be made to produce decent prints. Such negatives will not only give the printer more work, but often a little more care and thought when operating will avoid a good deal of work for the retouchers. A better fold in the dress, a slightly more turned position of the body, and such like comparatively small details will often obviate the need of knife work on the negatives. Attention to details, such as the few stray hairs over the forehead or catching the strong light against a dark background, with the simple request that they may be brushed back, will again save a great deal of time for the retouchers.

The retouching itself is one of the most important factors of good work, and it is very bad policy to allow this to be hurried. Bad retouching means that the spotters will have to "work up" the face on the prints, so that in the end twelve times as much work will be required for each order for a dozen prints, whereas an extra ten minutes' careful retouching does once and for all and moreover does it better. I am fully conscious that modern high-class portraiture calls for more and more time, care, and personal attention, and it almost seems that the production of such work requires so much of this personal factor and that each sitter must be treated in such an individual manner that none of this work can very well be reduced to a system. Be this as it may, there are parts of even this work that can be so systematized so that time can be saved.

In the more general average work of more or less a "straight" character—the "bread-and-butter" work of the average professional—there are many ways in which time can be saved, and not only time saved but the risk of faulty treatment avoided. When, in common with most professionals, this war began to make me short-handed, I found that more and more of the work fell directly to me to do, and therefore I was forced to look about for ways of doing this with as little waste of time and energy as possible. Also I soon had to begin to employ either less skilled or even unskilled labor, putting young girls to do work that in the ordinary way was done by men improvers. This meant some radical alterations in methods, the chief perhaps being the installation of tank development. Now, however, that I have got tank work well in hand I would not think of going back to dish development.

At first I only put the cheaper work through the tanks, and stayed often far into the night personally developing my best work in dishes, adding a little bromide here, soda there, and pyro somewhere else to get the best I could on the plate. But now I would rather entrust my best work to the tanks and do the cheap work by hand if it was a matter of quality.

It knocked some of the conceit out of me to find that the tanks were better developers than I was, but it taught me a good deal; among other things it taught me how to expose properly, and it taught me how to save I know not how many hours a week.

Another way in which a great deal of time has been saved and far better quality has been obtained is in copying. This soon began to be a real bother when the work had to be done in the studio at such odd times between the sittings as could be managed, and often the work got put off, so that prints were not ready to time. This would not do, so I fixed up a home-made permanent copying board and camera in a dark corner of my workroom, illuminating the copying board with two ordinary electric lamps. A plain board about 20 x 16 ins. was fixed at right angles to a board about 6 ft. long, on which were placed two rails or guides, between which the camera slides forward and backward for focussing.

Two wire arms extend outward and forward

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from the copying board; to the ends of these the two 32-candle power lamps are fixed, and on each bulb is an ordinary "shell-shaped" reflector, which reflects the light on to the copying board and also shades the light from the lens. An old cheap second-hand camera was purchased, and to it was fitted one of my stock lenses, which was found most suitable, so that now the copying board and the camera are always ready for use at a moment's notice, and there is no excuse for work not being done.

It may be of interest to know that for copying a print to "same size" under these conditions, with lens stopped to *f*/11, and using a plate of about 200 H. and D., the exposure required is about one minute.

Among the more mechanical operations connected with the production of photographs perhaps none is more important, or takes more time, than trimming and mounting.

There is a great deal of scope for one's artistic talent in the correct trimming and the selection of a suitable and harmonious mount, and also in the correct placing of the print upon the mount, but when this has once been settled for a given order the actual trimming and mounting of the prints is a job that can be placed in the hands of almost any careful lad or girl, even though they may not be experienced. It is a mistake, however, to entrust this work to them unless at least one print of each order is trimmed by a thoroughly experienced assistant, to serve as a guide print for the others.

The common use at the present day of trimming desks, such as the Merrett or Kodak desk, which mechanically cuts each side of the print, makes it more difficult to trim the prints, so that the figure is quite properly placed in the picture space than was the case when a glass trimming shape was placed over the print, through which the image was clearly seen. It is very easy to cut the prints so that the figure is too much to one side or the other.

To prevent this I used for all my ordinary work, which was to be mounted on stock mounts with a definite plate mark or a definite shaped design, a mask cut out from one of these mounts, and had each print so placed under this mask and pencilled round so that no mistake could be made. This plan answered well; the only drawback was that it took a considerable time to mark each dozen prints in this way. I therefore devised the following simple home-made device, which automatically masks the prints during the printing and so demands no extra time at all.

For cabinet portraits taken on half-plate negatives I made the following printing and masking apparatus: An old whole-plate glass was cleaned off and forms the base. Then a cardboard mount, of just about the thickness of an average negative, was also cut to the same outside size of the glass, and the centre of this cardboard was in turn cut out so that a half-plate would just lie in it on the glass. In order that the negative could not slip down between the cardboard and the glass, a piece of stiff art paper was glued on the under-side of the cardboard mount or carrier, having an opening a little smaller than the full size of a half-plate, thus forming a sort of rebate to hold the negative. This cardboard and the glass were then bound together down each of the long sides with stout passe-partout binding. Then another piece of art paper was cut about 10 ins. x 5 ins.—that is to say, a good deal longer but much narrower than the whole-plate glass, and in this was very carefully cut out a space exactly the correct shape that all the prints were to be trimmed to, great care being taken that this opening was truly squared. This mask was then slipped down in between the cardboard carrier and the glass. By means of its long projecting top it can be slid about behind the negative into any position, so as to mask just which portion of the negative is desired. This very simple and quickly-made article then masks all the cabinet prints as they are printed. When trimming, all that is necessary is to make the cuts just within the white borders. A similar arrangement has been made for carte-de-visite prints from quarter-plate negatives, and the same device could be adapted to any size print.

I can hardly imagine any greater time-saver than this has been to me recently when used in conjunction with a bromide printing machine, such as I described some time ago in these pages, or with a machine such as that sold by Moore, of Denmark Hill.

In order to speed up and still further make work easier I have discarded using small cabinet or half-plate pieces of paper, and now only stock all my grades in one size, viz., 12 x 10, this being the largest size I work in. When 10 x 8 prints have to be made I tear off the odd strips and keep them for carte-de-visite prints. Whole-plates come quite well on half a 12 x 10 in most cases, and cabinets I print four on a 12 x 10 sheet without tearing it.

The first exposure is made on the top left corner; then the paper slipped along to expose the second on the top right corner; then the paper reversed and two more exposures made upon it. Thus for each four cabinets there is only one 12 x 10 piece of paper to develop, or only three large prints to develop, fix, wash, and lay out to dry for each dozen prints. This makes the handling of a batch of prints much more simple, and also tends to more even results all round.

Carte-de-visite prints are made in the same way, and these can be got eight on a 12 x 10 sheet, so that for a dozen, one full sheet and one half sheet are all that have to be handled.

At Christmas time, when a large number of small-sized prints are made for Christmas-card work usually of midget or small C.D.V. size, these take up a great deal of time in trimming, as these small prints are exceedingly difficult to trim truly square, so in order to overcome this I have for some time past ordered all my Christmas-card stock, as far as possible, in ovals or circles, as these can be trimmed very much quicker with one swing round of the cutting wheel than they can be trimmed square by four distinct cuts of a trimming desk or knife and glass shape.

These, then, are some of the ways in which I have managed to save time and keep pace with the work since my regular staff has been depleted, and I pass them on with pleasure if they will be of help to others.—H. ESSENHIGH CORKE, in *British Journal of Photography.*

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Intensifying Underexposed Negatives

Underexposure is admittedly the fatal error in negative making, but it is an evil which sometimes has to be faced if one is not to miss a tempting subject which offers itself in a poor light or at a late hour when one's total equipment is a hand camera; in such a case we may find ourselves in possession of a negative painfully lacking in detail, but with the high-lights, such as the sky, already sufficiently if not over dense. If intensification by means of mercury is resorted to, these dense portions will become unprintable, and the negative is still useless.

Should the following method be adopted it will be found quite easy with ordinary attention to turn such a case of underexposure into a perfectly harmonious negative. The first step in this quite simple process is to bleach the plate in a solution of:

Pot. ferricyanide	20 gr.
Pot. bromide	30 gr.
Water	5 oz.

The action must be allowed to proceed until the metallic silver is completely converted into bromide, the back of the plate at this stage showing white all over. After washing for about ten minutes in running water, the negative is immersed in a weak bath of sodium sulphide, say ½ drm. of 10 per cent. solution in 4 oz. water, the dish being kept rocked. We are now at the crux of the operation, and the worker must be on the alert. Within a few seconds lift out the negative, rinse under the tap, and examine the back; if the weak parts still show white, re-immerse, and again quickly rinse and re-examine. What is aimed at is to remove from the sulphide bath as soon as those portions requiring intensification have turned black but while the sky still retains an appearance of whiteness. After a momentary rinse the negative is now placed in a solution of soda hyposulphite, the usual working strength. As soon as all whiteness has gone from the back, the plate may receive the usual washing to remove the hypo.—*Amateur Photographer.*

Gaslight or Bromide—Which?

This is a quite common and very natural question from the beginner. One might reply with such a question as, "Do you like large or small pictures?" etc. As regards the relative merits or features of gaslight *v.* bromide, there are so many points to consider, and also the tastes and circumstances of workers vary so greatly, that no general reply can be given to one and all. It is a case where each querist must balance up the pros and cons, and then decide for himself after considering the following points:

1. *Cost* of paper about the same, though gaslight is often slightly the dearer.
2. *Cost* of chemicals practically the same.
3. *Dark-room.* For bromide work something of this kind, though it need not be elaborate; but gaslight paper can be manipulated in any room with blinds or curtains drawn at night time. The work-room may be lit by an ordinary candle.
4. *Exposure.* Considerably longer with gaslight than bromide—say minutes with gaslight, as compared with seconds with bromide under identical circumstances. Thus printing of gaslight by daylight inside a room becomes practicable, though not to be recommended on account of the variable quality of printing strength of daylight. In general a gaslight print does not take quite so long to develop as does a bromide print.
5. *Negatives.* The general tendency of gaslight paper is to give a more contrasty result than bromide from the same negative. But this is not inevitable by any means. We can get contrasty prints with bromide and soft prints with gaslight; but this is not so easy as contrasty results with gaslight and soft prints with bromide. The whole matter is chiefly a question of exposure, provided the negative does not err greatly on the side either of extreme contrast or opposite. The beginner must be careful not to confuse density and contrast. An overexposed negative overdeveloped will have both flat contrasts and considerable density, while an under-exposed plate underdeveloped will have soft contrast and feeble density.
6. *General Effect, Tone, etc.* On the whole a bromide print appears to respond more readily and satisfactorily to after-treatment generally, including toning. But in the matter of toning, different brands vary somewhat, *i. e.*, some papers, both gaslight and bromide, tone better by one bath, other papers in another bath.
7. *Enlarging.* Gaslight requires a more powerful light source than does bromide, *e. g.*, the former is suitable for electric arc light, the latter for incandescent light, gas or electric.

As Regards the Final Result. It is not possible to distinguish one from the other by mere eye inspection. A good gaslight print and a good bromide print stand side by side.—L. M. P., in *Amateur Photographer.*

Photographs on Mirrors, Backed with a Silver Deposit

The application of a photograph upon a mirror has been the desire of many photographers, as well as makers of mirrors, and with but very few exceptions the attempt to use a carbon transparency, then coat it over with a silver deposit, has failed, one of the principal causes of failure being brought about by the softening of the carbon image with the use of an *ammoniacal* solution of silver to produce the deposit. To be successful in this class of work, the photograph must consist of a collodion transparency made by the same means as collodion negatives are produced for half-tone and line work. In this case the screen is omitted, the transparency being produced in the camera from a negative of the subject required. It is necessary to have a wet-plate outfit, the nitrate of silver dipping bath, a bottle of special collodion, and a developer made from protosulphate of iron, a small quantity of thin india-rubber solution, and negative collodion of a good quality. The glass plates used in making the transparency must be albumenized and dried.

The formulæ for all the necessary material are here given:

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Albumen Solution for the Substratum

Albumen of one egg well beaten with a silver-plated fork.	
Distilled water	40 oz.
Strong water ammonia .	60 drops

Shake well, allow to stand for twelve hours, then filter into a clean bottle for use.

India-rubber Varnish

Commerical india-rubber can be thinned down with benzole until quite fluid.

Leather Collodion

Alcohol	65.0 parts
Pyroxyline	2.0 parts
Sulphuric ether, sp. gr. .	720.35 parts
Castor oil	1.0 parts

Negative collodion iodized, one-half pound bottle; one 8 x 10 dipping bath with dipper; a stock of clean glass plates and a developer made up as follows:

Protosulphate of iron . .	1 oz.
Glacial acetic acid . . .	1 oz.
Alcohol	2 oz.
Distilled water	32 oz.

First dissolve the iron salt in the water, then add the acid and alcohol and filter.

The Nitrate of Silver Bath

Recrystallized nitrate of silver	3 oz.
Distilled water	40 oz.
Nitric acid	5 drops
Iodide of potassium . . .	5 gr.

Shake well until all is dissolved, then filter and place in the glass dipping bath.

Fixing Solution

Cyanide of potassium . .	100 gr.
Water	10 oz.

The glass plates must now be well cleaned in a hot solution of common washing soda, rinsed in clean water, dipped into a mixture of hydrochloric acid, 1 ounce; water, 20 ounces; washed again under the faucet, then while wet pour a small quantity of the albumen solution over the surface, allow to drain, then stand in a clean rack to dry. When dry the plates should be so packed that the albumenized surface may at all times be known. Coat one of the plates with iodized collodion, immerse it in a bath of nitrate of silver (of course, all the operations are performed away from white light). As soon as the greasy lines disappear from the collodion surface the plate may be placed in the plate holder, ready for exposure. Having placed the negative in position and focused upon the ground glass of the camera to the size required, the exposure may be made, which will require about twenty seconds in a good light. The plate must now be developed with the iron developer by pouring just enough developer upon the plate in one sweep to cover the surface without stopping. Just as soon as the detail of the image is well rendered, wash the plate under the faucet and fix the image by pouring cyanide solution on and off the plate a few times. Fixing will be complete in about half a minute. Wash the plate carefully under the faucet for a few seconds, then stand aside to dry.

Just as soon as the transparency is perfectly dry, which may be aided by heat, it must be coated over with a coat of india-rubber varnish, allowed to drain and dry. When completely dry a coat of leather collodion must be applied on top of the india-rubber, and this too must be allowed to dry. It must be borne in mind that the drying must be complete in each operation, and the plate must be cold when each solution is applied, or air-bubbles will be sure to appear and spoil the transparency.

The collodion picture now being ready for stripping, the film must be cut with the point of a sharp penknife about an eighth of an inch from the outer edge and placed in an acid bath made up of acetic or sulphuric acid, 1 ounce; water, 12 ounces. The film will soon begin to loosen. It may now be lifted off the plate, washed in clean water, and laid upon a piece of clean wetted glass until required for its final support. The following solutions must be prepared previously for the silvering operation and kept ready for use, although any other silvering preparation may be employed:

Nitrate of silver	80 gr.
Distilled water	7 oz.

When dissolved, add water ammonia a few drops at a time, stirring with a glass rod, until the precipitate formed is nearly dissolved. A little precipitate must be left in the vessel. Allow to stand for an hour, then decant the clear solution into a clean stoppered bottle; mark it A. Now prepare a second solution.

Nitrate of silver	35 gr.
Distilled water	4 oz.

Warm this in a glass flask to about 118° F., dissolve 25 grains of Rochelle salts in four ounces of warm distilled water. When dissolved add this to the silver solution, shake well in a clean flask and boil for a few minutes, then filter while hot, and add 12 ounces of distilled water, place this in another stoppered bottle; mark this B. Allow this to become cold. The solutions are now ready for use. Prepare and filter a solution of

Protochloride of tin . . .	60 gr.
Distilled water	10 oz.

Take the glass to be silvered, clean it very thoroughly in warm soda water, wash well. Then pass it through a bath of nitric acid, 1 part; water, 20; wash well, then lay on the photographic films upon the part desired, and smooth it down with a very thin India-rubber squeegee. The film will adhere perfectly. Pour a little distilled water over the plate, and then a wash of tin solution, wash well by pouring distilled water over the plate, then level the plate upon a suitable stand in a warm place. Mix a few ounces of the silver solutions in equal parts, then pour this mixture upon the centre of the plate until the whole surface is covered to the edges; allow this to stand for about one hour undisturbed, when it will be found that there is a perfect coating of silver all over the plate. It may now be washed and dried, when it will be

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found that the photograph presents a beautiful appearance, particularly if the glass plate has been beveled. The mirror is now complete, ready for framing.

Pencil Marks on Bromide Paper

Considerable annoyance is sometimes caused to the users of bromide paper by what are called pencil markings, which sometimes occur on the white surfaces of bromide prints; the defect is usually laid to the charge of the unfortunate manufacturer, but the lines are not, however, necessarily in the paper when it is packed, but may be caused by abrasion while in the packet or any time before development. The lines appear after development, and as they show very prominently on plain white surfaces, they always spoil what would otherwise be a good print if allowed to remain. These marks can be easily removed from the *dry print* by gently rubbing with a tuft of wet cotton wool.

A Simple Emulsion for Matt or Glossy P. O. P.

Since the introduction of platinotype the popularity of matt-surface photographic printing papers has been largely augmented. The public taste for prints made upon matt-surface paper has taken many years to educate. Not many years ago the majority of the photographer's patrons would accept nothing but highly glazed prints, while today the demand is almost entirely for matt-surface portraits. Strange as it may appear, no one ever asked for or expected to see a steel engraving upon a glossy surface, no matter what that engraving represented. The matt-surface engraving was always admired for its beautiful and artistic rendering of anything and everything that it represented, and yet the demand held sway for a glossy surface for any print made by photography.

Whenever a matt surface was required for a portrait the usual plan was to sensitize a sheet of albumenized paper upon the silver solution by floating it upon the back of the sheet instead of the glossy face. This plan answered well; the only drawback was that the grain of the paper was of a coarser character upon the back, so that for small portraits this grain was a little too pronounced.

Many photographers who had facilities would prepare a specially salted paper for portraits that were to be colored, and in this way overcome the objection of sensitizing albumen paper upon the back. Nearly every photographer had his pet formula, and guarded it with such care that he would trust no one to prepare the paper with its salting solution except himself. It is a well-known fact today that one of the very best surfaces to work upon for coloring in water-color is the carbon print. Apart from its absolute permanency as a base, the surface possesses the right tooth for the adhering of the pigment. It is just such a surface as this that is required upon other prints than carbon, both for finished matt surfaces and for the purposes of coloring. The way to obtain this surface upon almost any kind of paper, and to print it out so that the correct depth is ascertained on sight, will be here described, and anyone desirous of preparing special paper for his own use will be enabled to do so. Some of the crayon drawing-papers can be utilized, as well as many other plain photographic papers that may meet the desires of the photographer. If a glossy paper is desired, the emulsion should be coated on a baryta coated stock.

There will be required, in the first place, two half-gallon stoneware crocks with lids. The best shape to employ is a crock with the sides running straight, with no depressed ridge at the top. One of these crocks is for the preparation of the emulsion, the other to receive the emulsion when filtered. An enamelled iron saucepan of about two gallons capacity will be required, in which to stand the crock for preparing the emulsion, and also to remelt the emulsion after it has become set. The following is the formula for the emulsion, which must be prepared and mixed in the order given. Failure will be impossible if these details are scrupulously attended to.

Having procured two half-gallon stoneware crocks with lids, clean them out well with hot and cold water, and place into one of these the following:

Distilled water	10 oz.
Gelatin (Heinrich's hard) . .	4 oz.

Cut the gelatin into shreds with a clean pair of scissors. Press these shreds beneath the water with a clean strip of glass and allow to soak for one hour. Now proceed to melt the water-soaked gelatin by placing the crock into hot water in the enamelled saucepan, the water standing about half-way up on the outside of the crock. Bring the water to boiling-point, and keep the gelatin occasionally stirred until it is completely dissolved. Then remove the crock to allow the contents to cool down to 120° F. Now prepare the following, which can be done while the gelatin is melting.

No. 1

Rochelle salts	90 gr.
Distilled water	1 oz.

No. 2

Chloride of ammonium . .	45 gr.
Distilled water	1 oz.

No. 3

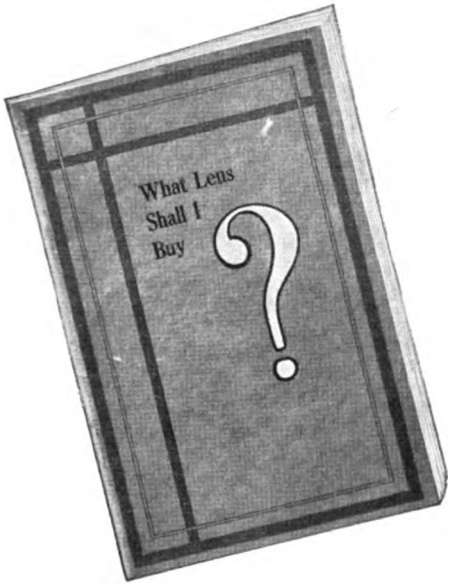
Nitrate of silver .	1 oz. and 75 gr.
Citric acid (crushed crystals) .	95 gr.
Distilled water	10 oz.

No. 4

Powdered white alum . . .	90 gr.
Distilled water (hot) . . .	5 oz.

The latter solution may be made with boiling water. When these solutions are prepared pour solution No. 1 into the hot gelatin, stirring all the while with a clean glass rod. Then add No. 2. Rinse the vessels with a little distilled water, and add to the gelatin. Now, while stirring, gradually add No. 3, and lastly add No. 4, which may be very hot. This will cause a decided change in the color of the emulsion. Lastly add two ounces of pure alcohol (photographic). This must be

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Of THE PHOTOGRAPHIC JOURNAL OF AMERICA, published monthly at New York, N. Y., for October 1, 1916.

STATE OF New York } ss.
COUNTY OF New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Thomas C. Watkins, who, having been duly sworn according to law, deposes and says that he is the Editor of the PHOTOGRAPHIC JOURNAL OF AMERICA, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of	*Post-office Address*
Publisher, Edward L. Wilson Co., Inc.	122 East 25th Street, New York City
Editor, Thomas Coke Watkins	122 East 25th Street, New York City
Managing Editor, none	
Business Managers, Thomas Coke Watkins and Edwin S. Brown	122 East 25th Street, New York City

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

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added very gradually with vigorous stirring, because if added too quickly it will coagulate the gelatin and form insoluble lumps. The emulsion must, of course, be mixed under a light not stronger than an ordinary small gas-jet, or under a yellow light obtained by covering the windows with yellow paper. The cover may now be placed upon the crock, and the emulsion put aside for two or three days to ripen.

At the end of this time the contents of the crock, now formed into a stiff emulsion, may be remelted in hot water by placing the crock in the enameled saucepan over a gas-stove. The emulsion may be broken up by cutting it with a clean bone or hard-rubber paper-cutter to facilitate the melting. Stir the mixture occasionally until thoroughly dissolved, and add the following as soon as the emulsion has reached a temperature of about 150° F.:

Distilled water	4 oz.
Pure alcohol	1 oz.

The emulsion must now be filtered into the second crock. The filtering is best accomplished in the following manner: Take an ordinary plain-top kerosene lamp-chimney, tie over the small end two thicknesses of washed cheese-cloth. Invert the chimney, and insert a tuft of absorbent cotton about the size of an ordinary egg. Press it carefully down upon the cheese-cloth. Fix the chimney in the ring of a retort stand (or cut a hole about three inches in diameter in a wooden shelf), so that the crock may stand conveniently beneath. In the chimney place a strip of glass, resting upon the cotton, to prevent the cotton from lifting. Now pour in the hot emulsion, and allow the whole of it to filter through the absorbent cotton. This accomplished, we are now ready for coating the paper, which is best done in the following manner:

Cut the paper into strips or sheets, say, twelve inches wide and the full length of the sheet. This will be, let us suppose, 12 x 26 inches. Attach, by means of the well-known photographic clips, a strip of wood at each end of the paper upon the back. Three clips at each end will be required. Having a number of sheets thus prepared, the emulsion should be poured into a porcelain pan or tray, kept hot by standing within another tray containing hot water. The emulsion tray being, say, 11 x 14 size, the paper now is easily coated by holding the clipped ends in each hand, then holding the left end of the paper up and the right-hand end lowered, so that the curve of the paper just touches the emulsion. Then raise the right hand, at the same time lowering the left hand at the same rate. Then lower the right hand, lifting the left. Repeat this operation once more; then drain the excess of emulsion at one corner of the tray, say, the left-hand corner. Just as soon as the emulsion has drained, the coated sheet of paper may be hung up to dry, by the hooks attached to the clips, upon a piece of copper wire stretched from side to side of a spare closet or room that can be kept darkened until the paper is dry. In this way coat as much paper as may be required. When it is dry it may be rolled up tight or kept flat under pressure until needed.

If any emulsion remains, it may be kept in a cool place for two weeks, and still be good for coating. Be sure to clean out all the vessels used before the emulsion sets, otherwise this will present a difficult task, since the emulsion sets into an almost insoluble condition.

This emulsion is so made that it does not require to be washed. If it is washed it will become spoiled. It is easy to make and easy to use. If it is desired that only small sheets of paper are to be coated, they may be floated on the emulsion, but in this case the paper must be damp, which is easily accomplished by wetting a sheet of blotting-paper, then covering this with two dry sheets of blotting-paper. Place the sheets to be coated upon these, and place under pressure during the night. Next day they will be in good condition for floating.

When the coated paper is dry, it may be printed and toned just the same as any other printing-out paper, with any toning-bath, and fixed in hyposulphite of soda as usual. Toning may be carried to a rich blue-black, or if not carried too far will remain a beautiful sepia color. After well washing and drying it will be observed that the surface corresponds with that of a carbon print; if the paper has been of a somewhat absorbent character, the surface will be entirely matt, and will give an excellent tooth for coloring or finishing in sepia, black and white, etc.

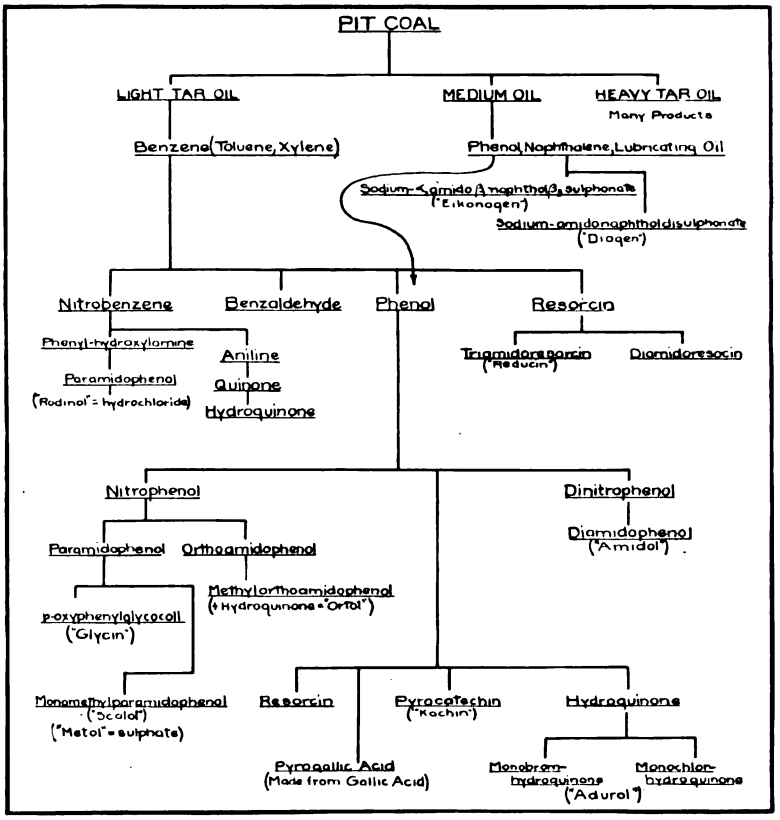
Washing Under the Tap

The following dodge will be found to allow of more efficient washing being given to a batch of prints which are washed by allowing the tap to run on them as the prints lie in a dish: Select a dish in which the sides slope outward very slightly. The majority of porcelain dishes have the requisite slope, and the only ones not suitable are those with quite vertical sides. Arrange the dish so that a fairly strong stream of water falls verticaly on the centre of one of the shorter sloping sides. If the water in the dish is stained a port-wine color with permanganate, it will be found that the whole of the color in a 10 by 8 dish will disappear in two minutes or less. This is the test for efficiency in changing the water. Then place twenty or thirty quarter-plate prints in the dish. If the water is running with a sufficient force, the whole will keep constantly on the move, each print continually changing its position, and never clinging to any other print.—*British Journal of Photography.*

Fading of Materials

As far as ruby or yellow paper or fabrics are concerned, some of the best in other respects fade rapidly when they are continuously exposed to strong daylight, as when they are used to obscure a window. Ruby glass, although this also has been known to fade appreciably in course of time, is much more permanent on the whole; and is therefore a good plan, if a window is to be blocked up with non-actinic media, to glaze it with ruby glass, and to put the paper or fabric inside this. The glass to a great extent protects the other from that form of light which is most likely to cause it to fade.—*Photography.*

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FAMILY TREE OF THE COAL-TAR DEVELOPERS

CHART SHOWING THE RELATIONSHIP OF THE MORE COMMON ORGANIC DEVELOPERS
Prepared by DWIGHT R. FURNESS

The main outline is in part from Geoffrey Martin, *Industrial and Manufacturing Chemistry*, vol. i (organic). The chapter on Photographic Chemicals was also consulted.

The chart is meant to show the relationship of the various developers and also some of the methods of derivation. All methods of formation are not shown. Only those of importance are dealt with for the sake of simplicity.

RETOUCHING HINTS

NEGATIVES which have to be retouched should be carefully rubbed with cotton-wool when taken from the washing water. If they are simply rinsed and put in the rack to dry, there is almost certain to be a deposit of lime or other substance left on their surfaces. This deposit is a cause of trouble when the negatives pass into the retouchers' hands. Unless the medium is rubbed all over the negatives there will be transparent patches where the medium has rubbed off some of the deposit. These patches will show in the prints. Furthermore, some of the deposit will have become so firmly attached to the film that the medium will not have removed it. This will cause a grittiness which is very annoying to the retoucher.

If the retoucher finds that the deposit has been left on a negative, he should clean the surface with methylated spirit and a soft rag before applying the medium.

Unless a negative is absolutely dry the pencil will dig into the film, and the work will be scratchy. It is always a good plan to warm the negative in front of a fire, or over a gas ring, before starting retouching. This will get rid of any moisture absorbed from the atmosphere. The negative must be allowed to cool before applying the medium.

Greasiness of the film is a frequent source of annoyance to the retoucher. When this is met with, the negative should be immersed in a 2 per cent. solution of ammonia for a minute, rubbed gently with a piece of cotton-wool, washed for quarter of an hour and then dried.

It is a mistake to use one kind of medium for all classes of work. A fairly thick or "tacky" medium should be used for large negatives with masses of shadow which have to be filled up

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broadly. A much thinner medium is necessary when working on small negatives with fine detail. The "tacky" medium takes the pencil freely. This is an advantage in large negatives where a certain amount of roughness is not a drawback. The thin medium takes up less lead, thus helping to keep the work close and fine which is always desirable in small pictures with fine detail.

When you have got all the lead you can on a part of a negative, and you want to add just a little more, it is a good plan to fold up a tube of paper and to breathe slowly through it on to the part of the film requiring more work. This will revive the tooth of the medium, and restore its stickiness, when a little more work can be added. The negative must be well dried after this treatment before printing.

It is not generally known that a negative may be given a matt surface, without injuring the film, by rubbing all over it with fine pumice powder. Only the finest pumice should be used for this purpose, and the best way to apply it is to rub it on with the palm of the hand working with a circular motion. Any amount of pencil can be got on a film treated in this way. It is a useful method for improving large negatives containing harsh contrasts, but it is not recommended for small pictures with delicate detail.

So many new methods for toning down harsh lights have sprung up in recent years, that some of the older ones have been almost forgotten. Some retouchers with long years of experience, however, say that they have found nothing better than ordinary ink eraser for rubbing down very dense patches in a negative. The best way to use it is to take a piece of thin celluloid and in it cut an opening the size of the patch to be rubbed down. When this is laid on the negative the ink eraser can be used freely without the risk of damaging the surrounding parts.

The study of anatomy is almost essential to the retoucher who wants to produce really good work. It is not necessary that he should know the names of all the facial muscles; his studies should be directed more to the careful observation of living faces than to learning long strings of Latin names from text-books. A great deal can be learned by looking at engraved or etched portraits by good artists. The direction of the lines should be carefully studied. It will be seen that, as a rule, the lines follow the contour of the various forms of the features. For instance, the lines of shading of the nose, mouth, eyelids and ear generally follow the forms of the particular parts they represent.

The forehead is generally over-retouched by inexperienced workers. One look at a forehead will show that it is not a flat surface, but that it is made up of a series of undulating curves. It should not, therefore, be worked up until it is of one even tint all over. There is an old saying among painters that the highest light in a portrait should be the part that would first get wet in a shower of rain falling in the same direction as the light is falling upon the sitter. In ordinary studio lighting this would be the forehead. As a rule, then, this is where the highest light, apart from the reflection in the eye, should be in a photograph.

In working up hair it should be remembered that the touch required is quite a short line. It is hair in the mass, and not a number of separate hairs that should be represented by the retouching. You cannot work in such a way that each pencil line represents one hair. If you attempt this you will make the hair in the portrait look like wire or string.

Everyone knows that when the corners of the mouth turn down they give a sad expression to the face, and that when they turn up the expression is suggestive of mirth. The matter, however, is not quite so simple as this statement would suggest. Every expression is not a question of one feature only but of the whole face. In laughter the up-turned corners of the mouth alter the lines between the nose and the mouth. At the same time the cheeks are raised and little lines appear round the corners of the eyes. These points should be remembered when altering the expression of a portrait.

The wrinkles which gather at the outer corners of the eyes must not always be regarded as a sign of age. They are often found in young people of a happy disposition. In fact, these lines come and go in most people as the cheeks are raised in laughter or lowered when the features are in repose. It is quite a mistake then, for the retoucher to make a point of always working out "crow's feet" in all portraits except those of old people.—*Professional Photographer.*

Buyer's Guide

Photographers appear to be in some doubt as to the trend of prices in photographic trade, and as this is a matter of vital interest to every purchaser of photographic material, we are glad to give our best information as to the methods of buying that should be followed at the present time. In the matter of chemicals, prices appear to be on the downward grade, and we believe that the high has been passed. We believe it wise to buy in small quantities of sufficient amount to last not more than two or three weeks. It is not the time to buy heavily of any chemicals, particularly hydrochinon and metol substitutes. The potassiums have had a violent drop, and have about reached their level for some time to come, and probably they will not vary much in price until the end of the war, and even after. Pyrogallic acid is high, and the manufacturers report that the cause of the present price is the excessive demand and the limited manufacturing capacity and supply of raw materials. While there is no danger of a shortage in pyrogallic acid, the raw materials are imported and the demand has been greater than the supply. Indications are that the prices will remain stable at the present level for several months, but as metol substitutes become lower in price, they will have an effect on pyro, and by spring the prices should be lower.

Cards are high, as all pulp stock and paper stock has advanced sharply. There is no immediate relief in sight, and present prices will probably last well into the spring. Photographic mounts are affected by the same conditions as print papers and newspapers, and by watching the course of these grades of paper, photographic mounts can be determined.

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There has been slight advances in materials using leather, metal and wood, but these advances are slight, and are caused by increased labor cost and excessive demand. There is slight indication of further advances, but nothing to indicate that there will be a reduction in the near future.

Dry plates will probably remain the same. American glass is available now, but the quality is not up to the Belgium glass which was formerly used. While the price of glass has advanced considerably, the manufacturers of plates have made only a slight increase in the selling price. We believe the present price will prevail until the war is over.

The future of the photographic paper is very uncertain. Photographic paper raw stock is in a class by itself; and there seems to be a steady supply, though the quality is not up to its former standard. There is no certainty as to the trend of prices, and we are unable to get any information to indicate whether they will remain at the present level or whether there will be further advances.—*Trade News.*

Dealing with Complaints

In most large towns there are at least two professionals whose work is of such a high standard that it is impossible to say that one is a better photographer than the other. This does not mean, however, that because one man's work is as good as another's they will be equally successful in business. You can see the same thing in other businesses.

You know that there is more than one shop in your town at which you can buy a reliable pair of boots. But you know also that you have your preference. You would rather buy your boots from Jones than from Robinson—even if Robinson's are just as good. Why is this? It is simply that you get better attention and better service from Jones.

Remember, "you are advertised by your satisfied customers," therefore, it should be your aim to satisfy everyone who comes to your studio. You will not always succeed. But even when you fail, and when a grumbler calls on you to "give you a bit of her mind," there is a way of dealing with her that will prevent the grumbling from being repeated to all her friends and acquaintances.

It is not enough that you should do good work and deliver it promptly. There are quite a number of men doing excellent work and turning it out smartly, but they just fall short of success, for want of that little bit extra—that little bit of tact and good nature in dealing with complaining customers.

Take a case you know well. You make half-a-dozen negatives of a lady; they are all good, and you submit a proof from each. She doesn't like the pictures at all. She finds fault with the expression, the pose and the lighting, but in the end you discover that what she really dislikes is something about her dress or the way she has done her hair. She wants another sitting, of course. What do you do? You are certainly morally right in protesting that she selected her own dressmaker, and her own hairdresser, and asked you to make a picture of her. You are very sorry, but she must pay for the trouble and expense you have been put to. Very probably she sees that you are right and does pay you—and never comes near you studio again. You have saved a little—but has it paid you?

Think it over. Suppose you say that at the time you really thought the dress very becoming, but now you see it is not the one to do her justice in a photograph, and that she must certainly give you another sitting. It is hard, when you know all the time that you are being deprived of a legitimate profit. But it is good business—and, in the long run, you will find that it pays.

Whatever the complaint may be, deal with it as if you were on the customer's side.

As soon as you hear what the trouble is about, make up your mind what you are going to do—and do it. If it is a request for a resitting, and you mean to give it, do not "hum" and "ha" about it. It costs no more to say that you are anxious to please your customers, and that you prefer another sitting, than to say that you really cannot see anything wrong with the pictures and that a resitting means a loss to you. But—if she insists upon it you are willing to make another attempt.

The result is the same—you give another sitting. But, in the one case, your customer is pleased, and feels that she is dealing with someone who is anxious to please her—in the other, she is embarrassed and uneasy, and will, most likely, go to the other photographer, whose work is as good as yours, the next time she wants any photographs.

Of course, in any complaint, you must judge whether your customer is honestly mistaken, or is simply trying to get something for nothing. The more often you can give in gracefully to the honest customer, the more you will make out of her in the long run. But when you are convinced that a customer is trying to cheat you, that is the time to stand upon your dignity and submit to nothing that means a loss or inconvenience to you. With a customer of this kind you will make little by yielding and lose little by insisting on your rights. Even with the honestly mistaken customer, there are times when it would be wrong for you to sacrifice a large sum merely to make her contented. You must be your own judge on these matters. But whatever you decide to do, do it in such a way that the customer will think you are studying her interests. You must convey the impression that to satisfy your customers is your chief aim.—*Professional Photographer.*

Stained Bromide Prints

At the outset it is advisable that we endeavor to discriminate between fog and stain, but at the same time it is not easy to tell the beginner in a few words what is the difference between them. Perhaps a few generalizations may be more helpful than a high and dry scientific definition. Stain may be local or general. It is often colored, and perhaps more often yellow-brown, but sometimes pinkish or even bluish. Fog is more usually local, but may be general. It is nearly

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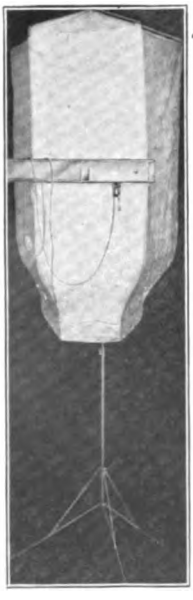
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always gray or black, but sometimes greenish-black. Fog is granular, stain is not.

Among the *Causes of Stain* may be mentioned: stale paper; paper stored in a damp place; developer stale, oxidized, or too cold; slow development; prolonged development; under-exposure, which also seems to favor staining, perhaps because it tempts one to prolong development; not rinsing off the developer before fixing; touching the print saturated with developer with hypo-contaminated fingers; and insufficient preservative (*e. g.*, sulphite, etc.) in the developer. Taken collectively these several charges are largely equivalent to "oxidation of the developer," or developer stain. It is to this point attention may first and chiefly be directed.

It is interesting to note that while dozens of formulæ have appeared which concerned stained negatives, very few have been suggested for stained prints. One reason for this is that pyro was and still is a very general favorite for plates and films. It found less favor for paper work, giving place to the more recently introduced so-called "non-staining" developers. True, pyro more quickly gives stain than perhaps any other developer (but this need not be so at all), while when the non-staining developers fail to uphold their reputation they give stains which are chiefly remarkable for their tenacity.

But from a number of experiments with stained prints I incline to think these "non-staining" stains can be removed. At any rate, I have succeeded in removing them in all cases so far tried. However, as this is a rather tedious process of several stages, it may be acceptable to mention a few one-bath procedures which are worth trying first of all. In the case of pyro-stained prints there is quite a good chance of thus removing the stain if it is not very pronounced.

(1) Water 20 ounces, common (potash) alum 1 ounce; preferably chrome alum ¼ ounce, hydrochloric acid 1 dram.

(2) Water 2 ounces, thiocarbamide 20 grains, citric acid 20 grains, or nitric acid 5 minims.

(3) It is convenient and economical to prepare small quantities of saturated solutions of potassium permanganate, sodium chloride (kitchen salt), and chrome alum. At ordinary workroom temperatures, say from 60° to 70° F., the following will give the reader some rough idea of how much water is required to dissolve one part of each of the above-named three salts, viz.: potassium permanganate 1 part, water 15 parts; table salt 1 part, water 3 parts; chrome alum 1 part, water 6 parts.

Now to proceed with a yellow, brown, or pink stained print. In 1 ounce water dissolve 10 grains citric acid; when this is dissolved, add chrome alum solution 5 minims, then salt solution 15 minims, and finally potassium permanganate solution 15 minims. Bathe the stained print in this deep-violet solution, wherein it will gradually bleach. Bleaching must be sufficient at any rate to cause nearly all, if not all, the blacks of the prints to change. This may take anything from three to eight or ten minutes. The print is now rinsed on *both* sides under the tap for say half a minute, and then bathed in water 1 ounce, potassium metabisulphite 10 grains, soda *bi*-sulphite, 20 grains, or until both paper and image are quite white and color-free. The print is again washed for at least a minute, and preferably five minutes, and then redeveloped in any developer that is not stale or slow acting. If citric acid be not at hand, 2 minims of hydrochloric acid or 4 minims of sulphuric acid may be used. But, for reasons into which one need not now enter, my present preference is for citric acid. I *think*—but this is only conjecture at present—that tartaric acid might equally well be used if more convenient. By the above procedure I have removed both yellow, brown, and pink stains.

Finally, a word of warning. Developer stain is frequently accompanied by more or less fog, especially round the edges of stale paper. While the foregoing may confidently be expected to remove the stain, the big chances are that the fog will again appear on redevelopment.—*Amateur Photographer.*

Pyro-amidol

Although the peculiar characteristics of amidol and pyro have been often stated, it will not be out of place if I indicate how, by a few experiments, each photographer may study these for himself. It is not necessary to use plates for the purpose. A few camera exposures may be made on bromide paper, which is usually about one-third the speed of a special extra rapid plate; but it is more instructive to proceed as follows.

The least exposure, which, on development with amidol (without bromide), will yield a tint on the bromide paper, is found. This will be about one second at ten feet from a candle flame. A series of exposures can then be given on the bromide paper, ranging from one second up to one minute, and the paper cut up so as to provide a number of strips each identical as regards exposure. Some of these strips can be developed in amidol for various times, and others in any standard pyro developer with and without bromide, and in varying degrees of dilution and for various times. After fixation and washing the strips are examined by transmitted light.

I ought to say that each strip must have an unexposed portion, to show fog if any is present. If fog arises, this is most probably due to the use of an unsafe dark-room light, or to too close an exposure to the light, for in working with a vigorous developer compounded for negative work it is not safe to work the bromide paper by the same strength of light as may be used in bromide enlarging. The bromide paper must be treated as carefully as a plate.

An examination of the strips shows that strong pyro, even without bromide, gives great contrast. The lighter tones are very slow in appearing. It is the developer to use if contrast is wanted. Dilute pyro acts softly, but is very slow, and hence is liable to end in fog and stain. On the other hand, amidol, even in dilute solutions (one grain to the ounce), acts with fair rapidity, and develops up the lightest tones almost simultaneously with the deeper, so that at whatever period we stop development the lightest tones are represented, and it requires very little accelerator.

From this it might be thought that amidol would have been considered by everybody as the

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developer *par excellence* for snapshots and underexposures generally. But there are drawbacks to the general use of amidol. Its very vigor makes it unsuitable for beginners, as it is difficult with it to recognize over- and underexposure, while the blue-black color of the negative makes it unpopular with P. O. P. printers. Since, however, P. O. P. is now largely replaced by gaslight paper, that is a consideration which has lost its force.

It occurred to the writer, however, that perhaps a combination of pyro and amidol would yield a developer which, while possessing the softness in working of amidol, would yield a negative in character like that of pyro. At first the experiments were unsuccessful. If amidol were present in anything like equal proportion with the pyro, the two did not work together in harness—the amidol ran away with the pyro, so to speak, while, if the alkali were reduced, the pyro stopped dead. This was seen by the color of the deposited silver.

It was then decided that the thing to do was to reduce the proportion of amidol greatly, and at the same time to select a pyro developer which worked with a minimum of alkali. Ultimately it was found that one-eighth or one-sixteenth of a grain, or less, of amidol to one and a half grains of pyro in an ounce of developer produce a mixture which acts almost as softly, and quite as quickly, as amidol alone, yet with some of the restraint of pyro, and yields a negative very similar in color to that of a pyro-soda developed negative. Further, and this is of great importance, it was found that by starting development in pyro alone and adding the amidol one minute afterward, the result was the same as if the amidol had been added at the start.

We simply flood the plate with the pyro developer and cover the dish for, say, forty-five seconds, then glance at the plate as it lies in the dish, and if there is a decided image, especially, if it is a flat subject, development may be continued in the pyro, otherwise the amidol is added. In neither case is there any necessity to look at the plate again until development is complete. For a contrasty subject we use the pyro-amidol.

I have already stated that the pyro developer must be one requiring a minimum of alkali. The one I selected as the best is made with neutral sulphite. The following is the formula:

Pyro Developer

Solution A

Water (cold)	4 oz.
Diluted sulphuric acid (one part in ten by volume) .	80 min.
Sodium sulphite (crystals)	260 gr.
Pyro	24 gr.

The water and the dilute sulphuric acid are mixed together in a four-ounce medicine bottle, and when properly mixed the sulphite is added in solid form. The bottle is corked and the sulphite allowed to dissolve, when the pyro is added. (N. B.—The sulphite must not be in separate solution before it is mixed with the sulphuric acid.) The pyro solution made in this way has very good keeping qualities. Thirty grains of metabisulphite may be used instead of the sulphuric acid, but there is no advantage.

Solution B

Sodium carbonate (crystals) .	192 gr.
Water to make	4 oz.

If sodium carbonate is bought by the ounce it may be reckoned that one ounce will make nine ounces of solution.

The working pyro developer consists of two drams of A, two drams of B, and four drams of water. In time development it is important to be strictly accurate in the composition of the stock solutions and of the mixed developer. The time of development, of course, varies for different brands of plates, and for different temperatures. Tables have been published by Mr. Watkins which are a good guide, but each worker had better make a standard time for himself, using the meter for his exposures, and keeping his developer fairly constant in temperature.

The formula of the amidol developer is as follows:

Amidol Developer

Solution A

Sodium sulphite (crystals) .	120 gr.
Water to make	8 oz.
Amidol	16 gr.
Crystallized oxalic acid . .	40 gr.

These are dissolved in the order given. After adding the oxalic acid the solution is shaken until the crystals of acid dissolve and a little longer—an occasional shake is sufficient—as a precipitate forms, and the mixture should not be left at rest while the precipitate forms. This should be labelled "Shake the bottle before using." I have not found it possible to make an amidol solution which will keep without having this precipitate. The precipitate is active, and care must be taken always to get a proper proportion of precipitate when the solution is measured out. The mixture keeps indefinitely.

Solution B

This is either the Solution B used for pyro, as given above, or, as an alternative, a solution of sodium sulphite may be used.

The working mixture consists of four drams of Solution A (equivalent to one grain of amidol), together with fifteen to twenty grains of sulphite or eight to ten grains of sodium carbonate, with water to make one ounce of developer. With sulphite the working mixture will keep clear a day or two, and is an excellent developer for bromide work. With carbonate it soon begins to discolor. Increased alkali makes the developer too rapid.

Pyro-amidol

The pyro-amidol formula is as follows: To each ounce of pyro developer prepared as above described, one dram of working amidol developer is added, equivalent to one-eighth of a grain of amidol. If this works too softly half a dram only may be used. Of course, if only one plate is to be developed it is not necessary to prepare an ounce of the working amidol developer, but the precipitate should be dissolved in the required

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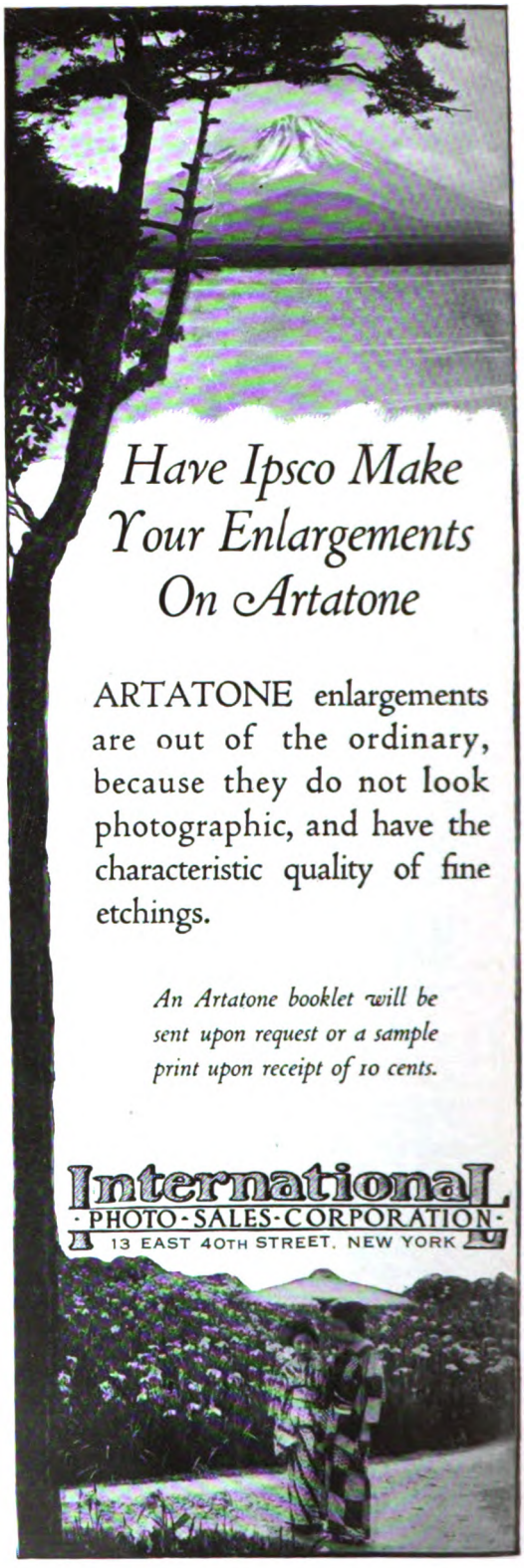
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amount of sulphite, or carbonate, whatever amount of stock amidol mixture is taken. Thirty minims of stock amidol and eight to ten drops of Solution B, stirred together in the measure, equal one-eighth of a grain of amidol.

The required amount of amidol is placed in a measure ready to hand, together with a separate dish, as if the slightest trace of amidol got into the pyro dish it is obvious that the rapid appearance of the image would mislead the operator. The plate is then flooded with pyro, and in forty-five seconds, depending on the make of plate, one will be able to tell whether the plate has been over- or underexposed. In the former case development may be continued in the pyro. In the latter the developer is poured into the amidol, and, after mixing it in the usual way, development is continued in the amidol dish. Of course, the hand-camera worker, especially if he uses *f*/8 or *f*/11, will practically require the amidol for his snapshots always. On the other hand, pyro alone will undoubtedly be preferred by the man who uses his camera on a stand and gives time exposures and is accustomed to give "a little extra for the plate."

When a fully active developer, without bromide, designed to develop to the limit of fog, is employed, it is impossible to get the edges where the plate is protected by the rebate quite clear from veil, especially if the plate were not backed. Veiling of the edges is probably due to the spread of light in the film, and will always be noticed where the sky comes up to the edge of the picture, unless, of course, the negative was given the minimum exposure for the sky only. The more excessive the exposure, the greater will be the veil. The writer has often seen strong development of the unexposed margins of a plate in tank development while the rest of the plate did not suffer from overexposure. This might be due either to contact of the plate with the wood of the dark slide or with the sheaths in the tank. It is no detriment. Veil all over the plate, due to an unsafe dark-room light, is another thing, but there is no excuse for that.

Those who prefer to use a little bromide in the developer will get brighter negatives, but it does not follow that they will be any better. It is interesting to note, however, that if a trace of bromide is used with the pyro, the addition of the amidol gives a negative exactly similar to that which would have been obtained if no bromide had been used and development conducted in the pyro alone. With bromide the time of appearance of the image in the pyro is about doubled.

A comparison of pyro-amidol was made with pyro-metol, and it was seen that the two had their utility in quite different directions. Pyro-metol, at least as usually compounded, appears to be designed to produce negatives of what is called "printing quality." Pyro-amidol produces soft, delicate negatives, highly suitable for enlarging or contact printing on gaslight paper.—T. H. GREENALL in *Photography*.

FIXING A PHOTOGRAPHIC PLATE BEFORE DEVELOPMENT

AT first sight it may appear absurd to think of fixing a photographic plate before the latent image has been developed, because fixing consists in dissolving the reduced bromide of silver. When an exposed sensitive plate is treated with hyposulphite of soda the opaline coating becomes completely transparent; not the least trace of an image is discernible, and the gelatin appears to contain nothing that can be disclosed by photochemical action. Nevertheless, paradoxical as it appears, this method is not only theoretically possible but has also several practical applications. If it were not limited to plates greatly over-exposed (six to eight times normal exposure), it would solve, better than any other process, the problem of development in open light.

The plate, protected from actinic light, is first immersed in a 2 per cent. solution of hyposulphite of soda. This bath dissolves the bromide of silver much more slowly than the usual fixing bath of 20 to 25 per cent. strength, but the latter has the disadvantage of destroying the delicate half-tones. Dissolution requires about thirty to forty minutes, according to the thickness and hardness of the gelatin. The plate can then be developed in full daylight. If desired, the plate may be washed and dried and laid aside for future development. The image is disclosed by *physical development*, that is to say, by bringing a reducing agent and a soluble salt of silver in contact with the exposed film. The developer will contain, for instance, pyrogallol and nitrate of silver. The pyrogallol decomposes the nitrate of silver, and the silver so precipitated is deposited upon those points of the sensitive coating which have been exposed to the light and in quantities proportional to the exposure. The exposed points constitute in fact so many centres of attraction for the deposit of silver which are progressively reinforced.—*Revue Generale des Sciences*.

PROFILES

YOU cannot make a profile portrait of every sitter. Very few have features so finely chiselled and so well proportioned that they will stand the test of being shown up in outline.

Some sitters do not know this. They take a fancy to a specimen profile portrait and immediately decide to be taken in the same pose. It requires tact and diplomacy to dissuade them and to get them to leave the final posing to the operator.

There must be something specially attractive in the profile view. From an artistic point it undoubtedly gives plenty of scope to the operator. Broader masses of light and shade can be secured than in the usual front view. There is more hair shown and this forms a valuable shadow against which the half-tone of the face tells very effectively. Then, if a hat is worn, the broadside view of the brim gives a graceful sweeping line.

But the chief attraction lies in the fact that it awakens curiosity. When you look at the profile of a beautiful woman, or of a man with a strong and interesting personality, you immediately want to get a glimpse of the full face. You want a more satisfying view—you feel that half the beauty and half the character are concealed.

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That is why the profile generally fails to satisfy as a likeness. It is more limited in expression than a full-face or three-quarter view. There is not much chance of revealing character by the expression of the eyes and mouth. Moreover, friends are apt to be more familiar with the features of a face as seen from the front than from the side.

Because of this defect in the profile portrait—because it hides so much—it is very flattering to some sitters. There are faces with clear-cut, well-proportioned outlines, but sadly lacking in expression. These, of course, make quite pleasing pictures in profile. Then again, where the features of a face are well-rounded and inclined to be a trifle heavy, the profile view with the head slightly tilted has a certain amount of grace.

When a sitter whose face is not specially adapted for it is really anxious to have a profile portrait, slight defects in the outline may be hidden by a little artful dodging in arranging the pose. For instance, a receding chin is no drawback if it is resting on the hand. Hair can be arranged to hide or subdue a receding forehead.

In all profile views, however, the most important point is to see that the direction of the eyes is in keeping with the pose of the head. The head may be tilted, it may be perfectly straight or it may be lowered. In any of these poses the eyes must look in the same direction as the face; otherwise some unusual or undesirable feeling will be expressed. This, of course, is very useful when photographing actors and actresses as different characters, but it is quite unsuited to ordinary portraiture where natural likeness is aimed at.

Carefully posed, profile portraits make charming pictures; but do not forget that they lose their interest sooner than the poses which show the eyes and mouth.—*The Professional Photographer.*

Improving Bromide Prints

It frequently happens that bromide or gaslight prints, which one wants to have black, turns out rusty or green. Instead of throwing them away they can be improved by toning with gold. The solution for this purpose is made of:

Ammonium sulphocyanide . .	30 gr.
Gold chloride	2 gr.
Boiling water	4 oz.

Now the proper way to make this is to dissolve the sulphocyanide in half the water and the gold in the other half, and add the gold gradually to the sulphocyanide, stirring all the time. It will be ready for use as soon as cool. After fixation the print must be well washed, and should then be squeegeed face up on a sheet of glass, and the above gold bath brushed over the surface with a broad and flat camel-hair brush till the color of the image is satisfactory; a thorough washing completes the operation.

PATENT NEWS

Under this heading it is proposed to include each month a list of all the U. S. Patents, and brief abstracts of the more important, and to include also such foreign patents as present special features.

Copies of any patent can be obtained from the Commissioner of Patents, Washington, D. C. Price, five cents.

Camera. Deuse and Vockroth. 1200174.
Film Reel. A. T. Schroeder. 1199827.
Background Carrier. Edison & Truitt. 1199773
Stereoscope. E. R. Conden. 1199965.
Film Winding Camera. Treadaway & Stephens. 1201002.
Aero Film Camera. Douhet & Zollinger. 1200819.
Printing Frame. W. C. Huebner. 1201048.
Automatic Printer. R. C. Neff. 1200753.
Printer. W. F. Taylor. 1200901.
Focusser. F. L. Schantz. 1201508.
Shutter. J. Richard. 1201764.
Projector. L. L. Headley. 1201727.
M. P. Viewer. W. R. Fitzwilliam. 1201813.
Color M. P. H. W. Joy. 1202724.
Film Cleaner. C. M. Conner. 1202165.
Opaque Projector. W. L. Patterson. 1202754.
Lens. W. Bielicke. 1202021.
Printer. A. Marean. 1202553.
Film Holder. F. F. Church. 1202160.
Developing Apparatus. S. A. Michausky. 1202405.
M. P. Machine. G. Schmid. 1202107.
Film Magazine. E. M. Wooden. 1202346.
M. P. Machine. Collins & Boylan. 1202863.
Projector. W. L. Patterson. 1202753.
Film Renovation. A. Trivelli. 1203548.
Timing Development. A. T. Moss. 1203384.
Printer. A. F. Mueller. 1203035.
M. P. Machine. Notley & Zeien. 1203238.

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PARAMIDOPHENOL
HYDROCHLORIDE

Manufactured by Thomas A. Edison

A new developing agent of great merit and economy, fully worthy of the celebrated name of its manufacturer, and the full confidence of the photographic fraternity, for both negative and positive development.

REDUCED PRICE LIST

1 oz. bottle, $0.85	**½ lb. bottle, $6.15**
¼ lb. bottle, $3.15	**1 lb. bottle, $12.00**

We believe the trade will do well to prefer this developer to so-called metol substitutes with fanciful names, as Paramidophenol Hydrochloride Edison has our unconditional guarantee of excellence and purity.

The Trade Supplied by

G. GENNERT
24-26 EAST 13th STREET, NEW YORK

320 S. Wabash Avenue	**455 S. Olive Street**	**693 Mission Street**
CHICAGO	**LOS ANGELES**	**SAN FRANCISCO**

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THE SYLVAR CAMERA

PLATES OR FILM PACKS SIZE 3¼ X 5½ OR 4 X 6

The Sylvar, of the much sought after compact-type camera, of foreign manufacture, that is fast becoming unprocurable in this country. It i your opportunity to secure one; after our present stock is disposed of, none will be obtainable until after the war.

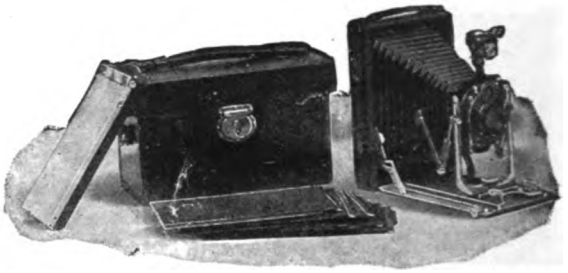
The Outfit complete, including camera, lens, six single metal plate holders, film pack adapter and solid leather case to take all. Fitted with a selection of lenses as the Sylvar Anastigmat F:6.8, *original* Carl Zeiss Tessar lenses F:6.3 and R. S. lenses.

DO YOUR CHRISTMAS SHOPPING EARLY AND MAKE IT A SYLVAR

Send For Catalogue **PRICE, $40.00 UP** *At Your Dealers'*

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SOFT EMULSION

for Portrait Work

COLONA PAPER

Now Second to None

Coated on German paper of which we have still a large reserve.



THE SUSSEX PHOTO SUPPLY CO.

NEWTON, NEW JERSEY

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CAVEAT EMPTOR!

(THE BUYER BEWARE!)

There are now so many developers on the market which have in one form or another tried to steal the enviable reputation gained by Messrs. Hauff and Co. for their justly celebrated and inapproachable developer "Metol" that the trade may be easily confused, particularly as whatever the beginning of the name the end is usually "ol."

We are astounded at the want of respect shown to the United States trade mark laws under which the name "Metol" has been assured protection through registration.

If these developers or so-called Metol substitutes are really newly discovered chemicals why not sell them under their proper chemical name, so that "He who runs may read?"

The trade is respectfully requested not to encourage this continued infringement of the "Metol" trade mark and to insist on the true chemical name (or formulæ in case of mixtures) appearing on the bottle.

Unless you encourage the man who honestly labels his chemicals with their true name, how can you expect to avoid being had? Respect the Trade Marks of others that yours may in turn be respected.

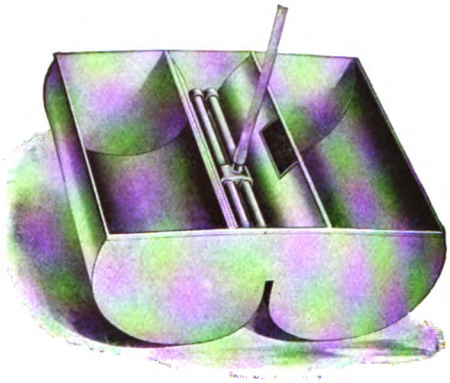
J. HAUFF & CO., Ltd.

G. GENNERT, American Agents

NEW YORK - CHICAGO - LOS ANGELES

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A reputation for promptness is a big asset, especially in a busy season—save time by using a



ROUNDS PRINT WASHER

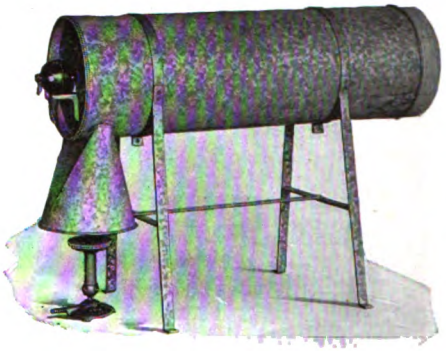
at the same time making certain your prints have been properly washed. Twenty minutes in a Rounds Washer is sufficient time to eliminate all hypo and insure thorough washing.

ROUNDS WASHER

MADE IN TWO SIZES

Capacity of 100 Cabinets or 4 x 6 prints,	$12.00
Capacity of 200 Cabinets or 4 x 6 prints,	33.00

Out of the wash water—into the rolls of the



IMPROVED MAJESTIC PRINT DRYER No. 1

and your prints are properly shaped, bone dry and ready for mounting in from twenty to thirty minutes. The two rolls will dry from 1,600 to 4,000 prints in a day.

No. 1 MAJESTIC PRINT DRYER

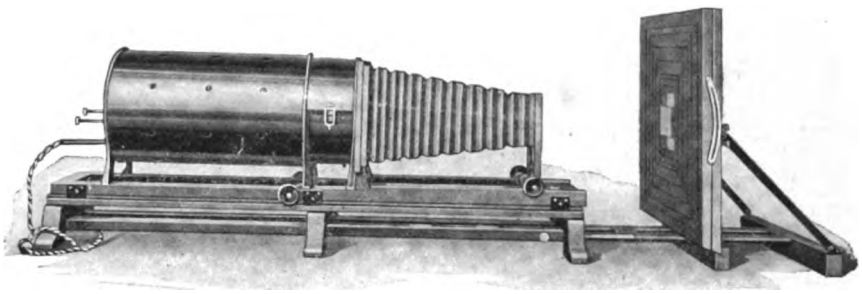
Complete with two drying rolls, electric motor, fan, gas heater and stand,	$25.00
Extra Drying Rolls complete, 11-inch,	3.00
Do., 7-inch,	2.50
Extra muslin faced blotters for 11-inch or 7-inch,	2.20

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

All dealers'.

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Don't overlook the big profits of the enlarging business.



We have increased the efficiency of the

EASTMAN ENLARGING OUTFIT

by equipping it with a lamp giving double the volume of light of that formerly used.

Mazda Nitrogen lamp 500 Watt—lamp and reflector adjusting screws outside of lamp-house—camera and lamp-house on roller bearings and fitted with quick acting lock nuts—10-inch condensers affording perfect illumination of 5 x 7 negatives—revolving adjustable negative carrier—drop front and hinged back easel and full set of kits to 20 inches—these are a few of the features of the Eastman Enlarging Outfit.

THE PRICE.

Eastman Enlarging Outfit complete with lamp, but without lens,	$100.00
Planatograph Symmetrical lens, 8 in. focus, - - - - - -	12.00

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ROCHESTER, N. Y.

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The good points of the

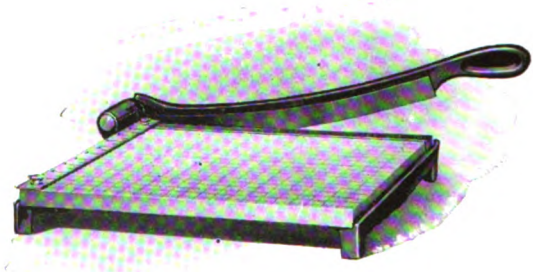


EASTMAN TRIMMER

that make it substantial, also make it accurate and dependable. Made entirely of metal—one piece solid reinforced bed, ruled with white lines in one-half inch squares on black enameled surface—solid brass rule—strong ground steel blade—transparent trimming gauge—rubber tipped legs. It cuts true and retains its accuracy with constant use.

THE PRICE.

Eastman Trimmer No. 10, 10-in. square,	$ 6.00
Eastman Trimmer No. 15, 15 in. square,	8.00
Eastman Trimmer No. 20, 20-in. square,	12.00



R. O. C. TRIMMER

A substantial trimmer for small and medium sized prints at a very reasonable price. Has ruled wooden bed, fine steel blade and substantial metal base.

R. O. C. Trimmer No. 1, 6 inch,	$1.50
R. O. C. Trimmer No. 2, 8 inch,	1.75
R. O. C. Trimmer No. 3, 10 inch,	2.00
R. O. C. Trimmer No. 4, 12 inch,	2.75
Transparent Trimming Gauge for either size,	.25

EASTMAN KODAK COMPANY,
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TOZOL

The Complete Developer

Requires the addition of no developing agent. It's right just as it is, and is prepared exactly as it was before the war.

The correct developer for Artura, Azo and Velox.

The Price

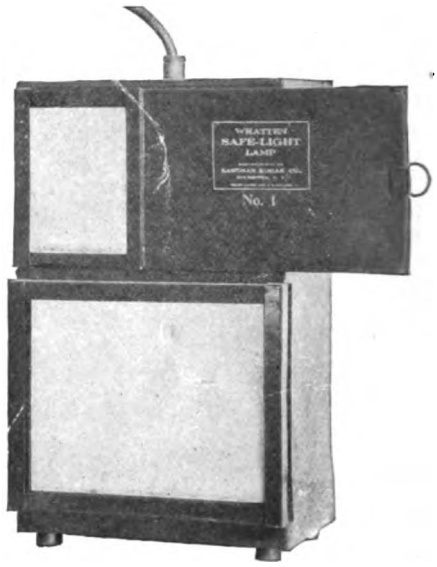
1 oz. bottle	$1.20
¼ lb. bottle	4.65
½ lb. bottle	9.15
1 lb. bottle	18.00

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

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Wratten Safelight Lamps



Afford the greatest volume of light by which a plate may be handled with a definite degree of safety because they transmit only the light to which the plate is least sensitive. The lamps are constructed only for electricity on the indirect or reflected light principle, giving a soft light which relieves eye strain. The safelights are spectroscopically tested to insure the absorption of the necessary colors and the transmission of as much safe light as possible. Series 2 Safelight is furnished with lamp unless otherwise specified.

Wratten Safelight Lamp No. 1, as above,	$9.00
Do., No. 2, without slide for white light,	6.00
Series 1 Safelight, for all plates not color-sensitive, 8 x 10,	1.00
Series 2 Safelight, for Orthochromatic plates, 8 x 10,	1.00
Series 3 Safelight, for Panchromatic plates, 8 x 10,	1.00



Kodak Safelight Lamp

This is an adaptation of the Wratten Safelight Lamps, smaller in size but similar in construction. The light from the globe in the upper portion of the lamp falls upon a curved white-enameled surface which reflects it through the safelight in the front of the lamp. The lamp is furnished with electric socket cord and plug but without electric globe. Series 2 Safelight furnished with lamp.

Kodak Safelight Lamp, complete as above,	$3 00
Extra Safelights, 5 x 7 any series, each,	.50

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The New Developer:

KODELON

(Paramidophenol-Hydrochloride)

An economical and highly successful developing agent, used in connection with Hydrochinon, for all developing-out papers.

It bears the Eastman Tested Chemical Seal.

THE PRICE

1 oz. bottle, ...	$ .85
¼ lb. "	3.15
½ lb. "	6.15
1 lb. "	12.00
5 lb. cans, ...	59.50

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EASTMAN PORTRAIT FILM

Extract from a practical article by the widely known English photographer, H. Essenhigh Corke, in the *British Journal of Photography*.

"To sum up, we make the following list of pros and cons:

"ADVANTAGES—Greater saving of carriage to and from studio, and impossibility of breakages. Extreme lightness in use for large sizes and for storage. Possibility of working upon both sides and printing from each side. Freedom from halation and, last, but not least by any means, the peculiar and wonderful "quality."

"DISADVANTAGES—Possibility of easily scratching the back of the film by careless handling. The slight possibility of fire or burning the film. The need in most cases of some alteration in the orthodox methods of working. Difficulty of extra rapid drying.

"I can speak, of course, only from my own experience, but I certainly think that the advantages far outnumber the small disadvantages, and that the last advantage that I have named—that of the quality alone—is enough at least to warrant a thorough trial of these films, for there is no doubt a "something" wonderful and indescribable that one gets in the negative which I, at any rate, have never been able to get in any plate made by the Kodak Company or any other maker.

"Like many others, I speak as I find, and, of course, I have no brief for the makers of these films, and I also admit that it was a long time before I screwed up courage to make the changes that they require. But I would advise any who have not tried these films, in fairness to themselves, at least to give them a trial, and then decide if the results merit the changes that will be necessary."

Your dealer sells them.

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ROCHESTER, N. Y.

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SEED GILT EDGE 30 PLATES

All the quality you look for in a plate—all the time.

This is what you get in the Seed 30 Gilt Edge—crispness and snap, without harshness—an abundance of detail, without flatness—exceptional speed, without the sacrifice of latitude or gradation—and all these qualities with the consistent uniformity necessary to continuous and dependable quality in your work.

It's a Seed Plate you need.



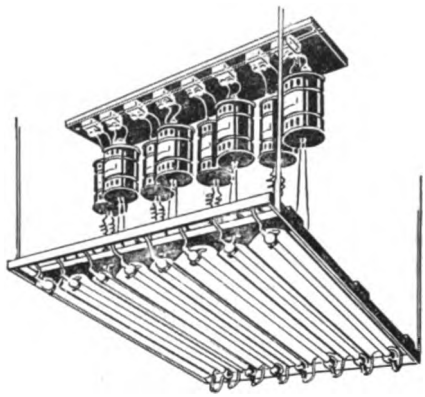
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Seed Dry Plate Division,
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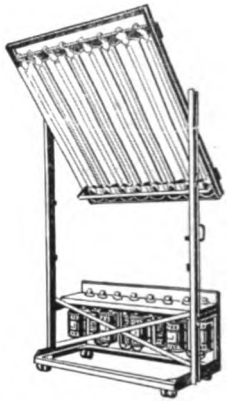
399 Varieties of Cooper Hewitt Photographic Outfits

are recorded in our specification records for different photographic requirements and electrical supplies. Below are shown the five chief styles, which are typical for that branch of the photographing business, in which the outfits are used.



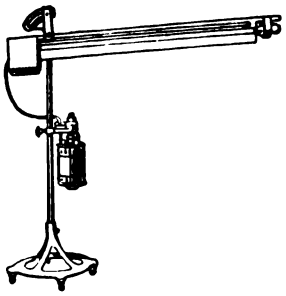
Skylight Frame for Studios.

The skylight frame consists of 50-inch lamp tubes mounted in porcelain enamel reflectors in a frame, with the lamp auxiliaries mounted nearby. Used for portrait work, lighting copy and is the standard unit for motion picture studios.



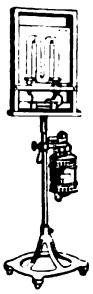
The Floor Stand.

Consists of a skylight frame mounted on a stand. The elevation and the angle of the light are readily adjusted.



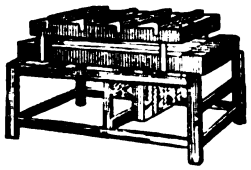
Duplicating Outfit.
(Horizontal position.)

The duplicating outfits are used for lighting copy of all sorts for photography. Always used in pairs with the photographic duplicating and copying machines.



Enlarging Outfit.

The enlarging lamp is equipped with the special M-shaped tube which gives a strong even field and obviates the necessity for condensing lenses.



Blue Printing Outfit.

A simple, economical outfit, for use with the usual sun printing frame.

Write for Bulletin 2458, Illustrating 18 Outfits.

Cooper Hewitt Electric Company

EIGHTH AND GRAND STREETS, HOBOKEN, N. J.

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THE luxuriously appointed studio employs Century Apparatus. Its rich finish and dignified efficiency harmonize perfectly with the most refined surroundings.

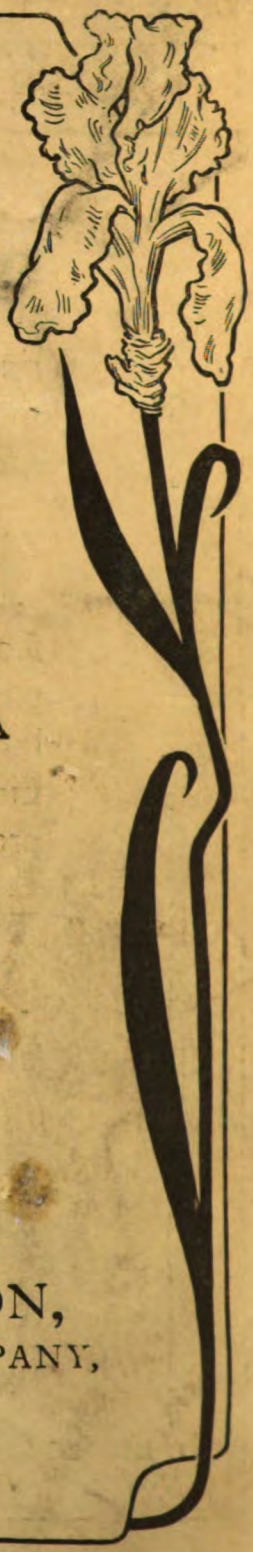
THE less pretentious studio *needs* Century equipment to dispel any feeling of uncertainty on the part of its patrons. In no other business is the buyer brought into contact with the mechanism for turning out the finished product.

WITH Century Apparatus your customers see that you have the best.

CENTURY CAMERA DIVISION
EASTMAN KODAK CO.
ROCHESTER, N. Y.

WILLIAM J. DORNAN, PRINTER, PHILA.

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A successful print is only secured by using a paper that will reproduce the quality of the negative.

ARTURA

Reproduces quality for quality—its success is due to its superiority.



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